THE IRON AGE

THURSDAY, MAY 26, 1892.

The British Pig Iron Trade.

The April returns of the Cleveland Ironmasters' Association, says *Coal and Iron* for May 9, afford us an opportunity of ascertaining statistically how detrimental has been the influence of the strike of Durham miners on the Cleveland pig-iron trade. The figures are the most extraordinary that have ever been issued, and as such they deserve more than usual notice. The strike has for the moment almost entirely destroyed the trade of what can fairly be described as the largest pig iron making district in the world The returns show that out of 151 furnaces erected in the North of England only four were at work on April 30; and, as there were 83 in operation when the strike commenced, it is apparent that the Durham difficulty is responsible for the damping down of no fewer than 79 furnaces, some of which will probably have to be blown out altogether if the strike is not speedily terminated. During March, the first month of the strike, 70 furnaces ceased operations, and in April nine. Not a single furnace is now making Cleveland or basic pig iron, and not a ton of Cleveland ironstone is consumed in any furnace, a circumstance which is unprecedented.

The four furnaces which are still at work are employed as follows: One at Bolckow, Vaughan & Co.'s works, making spiegeleisen; two at Gjers, Mills & Co.'s Ayresome Works, one making hematite, and the other ferro-silicon; and one at the Weardale Iron Company's Tudhoe Works, making a special kind of pig. Gjers, Mills & Co. are obtaining coke from South Yorkshire at a cost, it is said, of 17 shillings 6 pence per ton delivered, against 13 shillings paid for Durham coke before the strike. They are also using South Yorkshire coal in the furnaces. The production of pig iron was by far the smallest on record, 11,837 tons, against 113,788 tons in March, 1892; 222,067 tons in April, 1891; and 235,157 tons in April, 1890. There were five furnaces making Cleveland iron during the early part of April, and they produced 3370 tons, but since Easter none has been made.

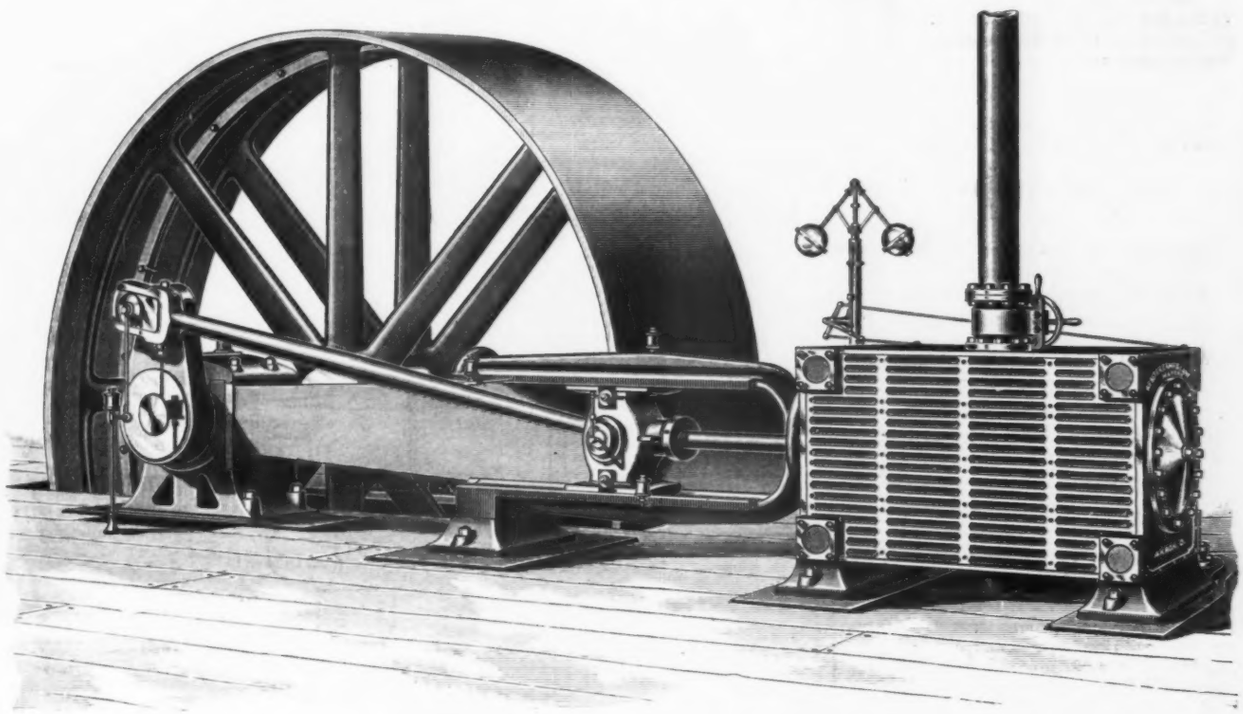
When we come to look at the statistics of stock we find figures that cannot but surprise. No one expected to see more than a decrease of 60,000 tons, but 74,963 tons are reported as the reduction, leaving only 168,196 tons in stock, or about three weeks' make, and the makers have only about a week's production in stock. Not since 1884 has there been so small a stock, but when it is considered that the make was practically almost suspended, and that consumers were forced to draw upon the stocks, it was only to be expected that a large decrease in the latter must result. Never before has there been a reduction in any month of more than 50,000 tons. The Durham strike is responsible for reducing the stock of Cleveland iron by 118,622 tons. This is a very desirable feature, and must place the ironmasters on a better footing when they get their furnaces to work again; but it would have been much better if it had not been brought about by the general paralysis of the trade of the district.

An estimate of the losses by flood in the district immediately tributary to St. Louis is given in the following astounding figures: St. Louis County, $3,000,000; St. Louis City, $1,000,000; St. Charles County, $2,000,000; the American bottom, from Alton (Ill.) to Cairo, $5,000,000, this including East St. Louis and vicinity; total, $11,000,000.

The American steamship line to Brazil from this port, besides carrying the United States mail, now transports 85 per cent. of the entire merchandise that goes hence to that country. Formerly tramp steamers took the bulk of the trade both ways.

The Akron Corliss Steam Engine.

Heretofore the Akron Corliss engines, built by the Webster, Camp & Lane Machine Company of Akron, Ohio, have been used entirely in connection with mining machinery erected by the company, and the aim of the original design, as well as subsequent improvements, was to make them well adapted to meet the requirements of this service. The new Corliss engine now built by the company, some of the main parts of which are shown in the accompanying drawings, is desirable for a service in which the duty is varying between extremes and the changes are sudden as well as frequent. Unusual strength and solidity of all fixed parts, large bearings and ample lubrication for the running parts, ease and rapidity in making adjustments or repairs are the principal characteristics. Special attention has been given to symmetry of outline and appearance, which means extra care in selecting materials and in finishing them.



THE AKRON CORLISS STEAM ENGINE.

The details of the engine that differ materially from other Corliss engines are the style of the bed, the connecting rod, the improvements in the valve gearing, the dash pots and the governor. The guides are circular and concentric with the cylinder, and the web connecting the guides is straight, but no further away from their vertical center line than if they were straight or V-shaped. Furthermore, the circle of the guides is so large that the oil does not readily run off the higher portions. There have been incorporated in this design the advantages of the straight V shaped guides, without any of their disadvantages. The method of finishing the beds gives the makers the further advantage of not being compelled to run a line in setting up each engine. As the bed is bored, planed and faced in one setting and the cylinder bored and faced in one setting, perfect alignment is obtained; and

repeated tests in the shop have proved the accuracy of their methods.

The valve, Fig. 2, is provided with ample seat and bearing to avoid cutting The valve stem is of steel on all larger engines, and is fitted with a brass tube S that rotates with the stem. The end thrust of the valve stem is not taken up by a collar at the outer end of the bonnet, as is usually the case, but the head of the stem bears against the dowel of the bonnet. A brass washer, W, that can readily be replaced is interposed between the dowel and the head to lessen the wear on these parts. The stem has a long bearing in the bonnet, which, combined with its large diameter, gives it an unusually large and durable wearing surface The slots in the valves are planed by special jigs that bring them absolutely central, avoiding thereby any possible strains due to eccentricity of the stem The connecting rods are made with solid end of a new design, in place of the strap, gib and key pattern, it being simpler and safer, and at the same time allowing of ample adjustment for wear.

The new dashpot illustrated in Fig. 3 produces a rapid closure of the steam valves without any noise or jar, and with little wear on the different parts. It is of the vacuum type, and its construction is such that it does away entirely with any piping. The cushion can be adjusted to a nicety by means of a needle valve and bypass connecting both ends of the compression cylinder. The dash pot is closed up completely, protecting it from injury by foreign substances. All pins are of steel and made accurately to gauge, and all parts are drilled to templet. These engines are made simple, compound, condensing and non-condensing.

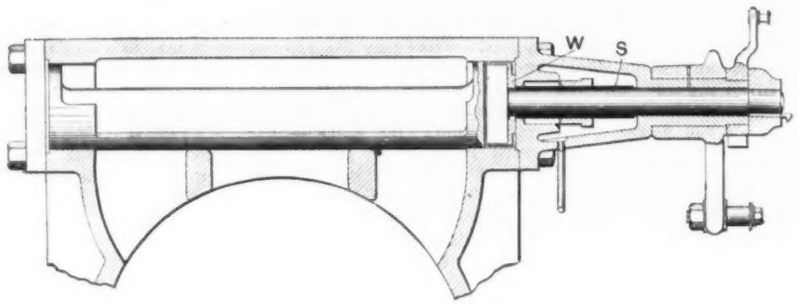


Fig. 2.—Section through Cylinder and Valve.

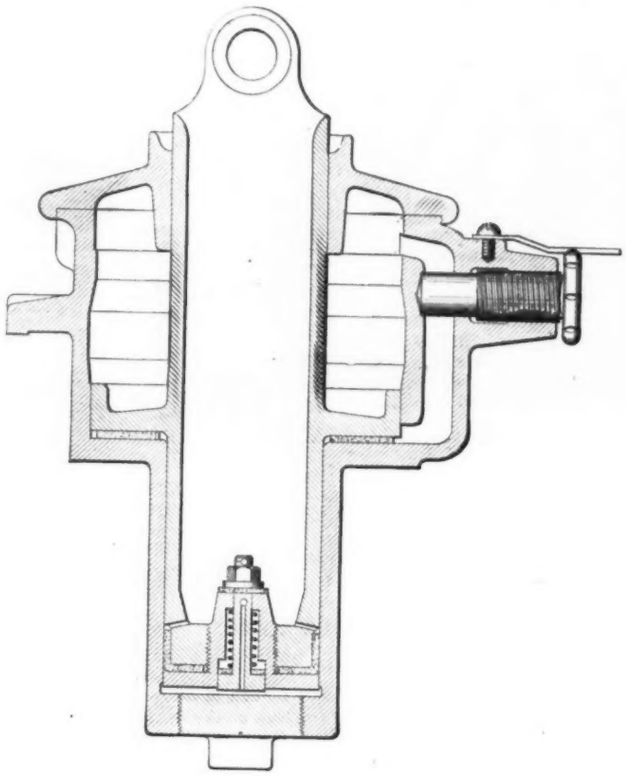


Fig. 3.—The Dashpot.

THE AKRON CORLISS STEAM ENGINE.

American and Foreign Tonnage Compared.

The tonnage of vessels engaged in the foreign trade entering and clearing at the ports of the United States during the last fiscal year was 18,204,295 tons, of which only 4,380,804 were American vessels. The number of vessels entering and clearing was 32,578, of which number 11,046 were American vessels.

Out of the 18,204,295 tonnage entering the ports last year, more than 10,000,000 were British vessels, American shipping coming next. Following came the German vessels, with a tonnage of less than 2,000,000 tons, Norwegian and Swedish coming next, with about 1,000,000 tons.

In this connection it is interesting to note the remarkable change in the methods of vessel building in the past few years, as exhibited by the figures showing the progress in this work in the United States. Twenty years ago no more than 3 per cent. of the tonnage of vessels built in the United States was of iron. Last year the tonnage of vessels built was about 30 per cent. iron and steel.

The latest reports of the Bureau of Navigation show that the tonnage of vessels built on the great lakes last year was 111,856 tons, against 105,491 on the Atlantic coast. In the building of steel vessels Cleveland was far in the lead of any other port, her tonnage of steel vessels built last year being, according to this report, 26,252, against 9341 at Philadelphia, 6328 at West Superior, and 5056 at Detroit. In iron vessels, however, Philadelphia took the lead, her tonnage of iron built vessels being 27,331, against 7078 at Wilmington and 2578 at Port Huron, Mich.

The number of vessels built in the United States last year was 1384, with a total tonnage of 369,303 tons. This is the largest number of vessels built in any one year since 1872. Of the 1384 vessels built in this country in the last year 488 were steam vessels and the remainder schooners, sloops, canal boats and barges; the tonnage was very nearly equally divided between the steam and sailing vessels, being 185,036.

A Chicago Polytechnic Institute.

In 1877 Allen C. Lewis, a wealthy merchant, died in Chicago, leaving a fund in trust which he directed should be used to establish a polytechnic institute when by accretions of interest the fund reached the sum of $800,000. It is now valued at $1,200,000, but one cause or another has delayed the building of the institute. One of these was the death of Henry F. Lewis, a brother of the testator, who was named in the will as a trustee. The surviving trustees have chosen an associate in his place and work on the building will soon begin. Outlines of the plans have been decided on. The institute will occupy a site on Van Buren, Bowery and Morgan streets and Tilden avenue. It will be five stories in hight, with an amphitheater capable of seating 1200 persons in the interior. It is expected that the school will be open for pupils a year from next September. The educational scope of the institute is to some extent left to the discretion of the trustees. Mr. Lewis' intention was to found a school where useful arts and professions should be taught Some difficulty in engaging instructors has already been experienced. A competent president was secured a short time since, but an offer from the new Chicago University proved an inducement greater than he could withstand, and the Lewis Institute is now looking about for his successor.

The new Mexican steamship line from Philadelphia offer to distribute samples or do anything else gratuitously for the encouragement of trade. The agents say: "We wish to co-operate in every way with the shippers to build up a trade with those countries on the south of us. They need all kinds of manufactured goods—nails, barbed wire, household furniture, hardware, canned goods, groceries and provisions."

The Rocky Mountain Lead Industry.

The question of the cost of production of lead in the United States is so complex that it is practically impossible to draw the general conclusions which are so readily made in the case of copper. It would be possible only with such mines as those of St. Joe, Doe Run and Mine la Motte, Missouri, in which no other mineral is produced. The annual reports of these companies are so closely guarded, however, that the cost laid down in St Louis, a primary market, has not reached the public prints for many years. The majority of the other Missouri, Kansas and Wisconsin mines produce zinc ore at the same time, so that a distribution of cost cannot be made.

The Cost of Production of Lead.

In former years there were a few concerns in the Rocky Mountain region, like the Richmond and Eureka of Nevada and the Horn Silver of Utah, which mined, smelted and refined. From their reports a good idea of costs could be obtained. But all three of them have sunk into insignificance, and, besides, conclusions drawn from the figures which they published were dangerous, since the ores were as much and more entitled to be called silver ores as they were lead producing minerals.

So far as we know, no satisfactory basis has ever been proposed by which the charges of cost could be distributed between the three metals generally present—lead, silver and gold. It is certainly incorrect and unfair to consider, as it is often popularly done, that lead is merely a by-product. On the other hand, it is as manifestly erroneous to assume that the prices often paid for lead in Rocky Mountain ores are a true measure of the value of the metal as such, because for special reasons more is often paid for the metal at the smelter than can ever be realized for it in the principal markets of the country, counting cost of treatment, transportation and incidental charges.

Prices Paid for Lead.

Let it be assumed, by way of illustration, that a 20 per cent. lead ore, containing no silver, was being smelted at Leadville at $6 per ton. Then the pig lead would cost at Leadville $30. Adding for cost of softening and freight to New York say $18, and for waste, interest, commissions, &c., $2 per ton, a total would be reached of $50. Now, the smelters currently pay 40 cents a unit on the basis of 4 cents for lead in the New York market, which would be equal to 2 cents a pound, or $40 a ton. This would apparently leave them a loss of $10 per ton in the lead. But usually they find it possible to obtain something for a smelting charge—say $5 per ton of ore, or $25 per ton of lead—which will leave a margin of $15 per ton. But they must pay between $9 and $10 a ton for refining and desilverizing, and allow a deduction of 3 per cent. for waste, or $2 per ton, which, in fact, is really a charge on the lead, although it is the outgrowth of the presence of the precious metals in the base bullion. The smelters pay 95 per cent. of the market value of the contents of the precious metals in the ore on the day of purchase, per telegraphic advices from New York. They must allow the desilverizer 3 ounces for waste, so that only a part of the 5 per cent. in their favor is available for interest, &c. When, therefore, the smelter is paying 40 cents a unit for lead ore at Leadville he has a margin of only about $2 to $3 per ton on the lead which he is buying, while the miner is getting $8 per ton for his ore. The latter is certainly not an extravagant return for mining in the heart of the Rocky Mountains, with high labor, and supplies at relatively high prices Our illustration, which may be regarded as typical, certainly proves that lead is not a by product. It shows also one very important fact, and that is that lead ores are scarce, and that the lead-silver smelters are forced to buy lead at close figures. Competition lately in some cases has forced the amount received for the working charge, placed in the above at $5, down to lower figures, and in some instances the working charge has disappeared entirely, making an actual loss on lead in the case of 20 per cent. ore of $22 to $23 a ton of the lead.

The Effect of Low Silver on the Lead Supply.

Of course such prices are paid only on rich lead ores, and the smelters recoup themselves by relatively high working charges on those "dry" ores which carry little or no lead, but only hold the precious metals. The latter have been in excessive supply since the Leadville mines ceased to produce large quantities. The situation is such, therefore, that the output of lead is encouraged. The low price of silver, on the other hand, may ultimately reduce the supply of the low-grade dry ores and thus make the smelters more independent of the mines whose ores run relatively high in the baser metal. Modern silver-lead smelting has so much improved that it has been possible to work on a smelting mixture as low as 8 per cent. of lead. But especially when the mixture runs pretty high in silver, yielding bullion, say, of 350 to 500 ounces per ton of lead, the smelters prefer, on account of the losses in silver, to work with a 15 to 18 per cent. lead mixture. The majority of them are even now working as close as they find it expedient to go. A good deal has been said in regard to the effect upon the lead supply of the country of low prices of silver. Under present circumstances, with lead ores as scarce relatively, and dry ores still as abundant, the influence of the decline in the white metal is not likely to be very pronounced.

The Struggle of the Smelters.

One of the most interesting features in the metal trade is the struggle between the silver lead smelters, among which are prominent the groups recently visited by a representative of *The Iron Age*, the Valley smelters at Denver and Pueblo, described in recent issues, the Leadville smelters and the works at Salt Lake City, Utah, the latter two groups depending largely upon local ores. Aside from the personal factors which must naturally enter into the questions of progress and prominence, like business management and technical skill, there appear to exist alliances and affiliations with railroad corporations and with allied industries which have a determining influence.

The Utah Smelters.

The Utah smelters, of which there are three, the Mingo, which is a branch of the Pennsylvania Lead Company, at Pittsburgh, the Hanauer Smelting Company, a long established concern, and the Germania Lead Works, depend largely upon Utah and Wood River, Idaho, ores. Generally speaking, these ores are low grade, and are concentrated at the mine, the principal districts being the Cottonwood, Bingham and Tintic. Large bodies of carbonate ores rich in lead, but relatively low in silver, are known to exist in the Deep Creek country in western Utah and eastern Nevada, but as yet no railroad transportation is available, and until it is obtained no very large supplies can be expected.

The Utah smelters are at some disadvantage, and on the higher grade ores Denver and Pueblo carry off their local supplies from their own territory. The freight on ores under $50 is $7.50 from Utah points to Denver, while on ores of the same grade it is $9 40 and on ores over $50 it is $13 40 to the Missouri River. The freight on base bullion is $13 to the Missouri River. Coke is high, costing $11 at smelter, while wages are about on the same basis as at Valley smelters. The natural gas discovered near Salt Lake is not likely to be immediately available for them, since they are located at Sandy, some distance from Salt Lake, so that its carriage would involve a relatively large outlay for a pipe line, and even then would only replace cheap coal for roasting and steam raising.

In spite of the apparent disadvantages under which the Utah smelters labor, the Mingo works, which are now temporarily idle, are to be enlarged and remodeled. To the present number of four stacks, three more will probably be added, while the roasting capacity of five furnaces will be increased to seven or eight. The Germania has four smelting furnaces, three revolving, and one reverberatory roaster, while the Hanauer has the same number of stacks and five reverberatories.

The Leadville Smelters.

Leadville, which at one time threatened to succumb to the competition of the valley smelters, has reached a better position, chiefly through the fact that it is now on a through line and can secure its fuel at considerably lower prices, Grand River coke, produced near Glenwood, costing $6.50 per ton delivered. It has the local ores to depend upon, and can reach Denver with a $4 bullion rate, while its ores are hauled at $4.50 to Denver, while the iron flux used by valley smelters takes a $3 rate. Practically, therefore, it has coke $1 cheaper, but pays a little more for wages. Common labor is $2 per day, against $1 75 at Salt Lake and at Denver. The principal works are the Arkansas Valley, with eight furnaces, now controlled by the Kansas City Smelting and Refining Company, who have considerably remodeled the plant. The Harrison Works are owned by the St. Louis Smelting and Refining Company, a corporation merged in the Lead Trust.

The Valley Smelters

have been fully described. They possess the advantage of drawing from a wider territory for their supplies of ore, and as already noted, take largely from the local markets of the Utah and Leadville works. One of them, the Grant smelter, at Denver, enjoys a special arrangement in regard to ores, from the Cœur d'Alene district in Idaho, the most important single lead-ore region of the Rocky Mountains. A milling-in-transit rate is in force, of $17.84 from the Cœur d'Alene to the Missouri River, the ores being smelted at Denver, and refined at the company's works at Omaha. We are informed that practically this makes the rate of freight on lead from Denver to the Missouri River $2 per ton, against the open rate of the other roads of $8 per ton. Efforts have been made to secure the same arrangement through other railroads, but as yet they have been unsuccessful. It is believed, however, that ultimately this smelting-in-transit arrangement must become general.

New Projects.

In spite of the sharp competition between the large number of works, and the fact that some of them are considerably enlarging their capacity, like the Grant, the Philadelphia, the Colorado and the Mingo, movements are on foot to establish additional concerns. We understand that Leadville is to have another large works, in which Boston capitalists are to be interested. There is a movement on

foot to build at Cheyenne, Wyo., and the project is being agitated to locate works at Grand Rivers, Col. Unless new sources of supply of lead ore are opened, the competition thus created threatens to become even fiercer than it now is. Colorado's latest camps, Creede and Cripple Creek, like Aspen, will not, so far as known, relieve the situation. They are "dry" camps.

The Two "Cities."

The importance to this country of the transfer from Great Britain to the United States of two of the most efficient steamships in the world cannot be too strongly stated. In the first place, the stipulations require that the Inman Company shall lay down in American shipyards an equivalent amount of tonnage. Thus it stands that when the United States shall take the two 10,000 ton steamers offered, then will be commenced in the shipbuilding establishments of our country no less than 20,000 tons of shipping. In the second place, these steamers must, all of them, comply with the law of March 3, 1891, which states that these ships may be taken and used by the United States as transports or cruisers upon payment to the owners of the fair actual value of the same at the time of such taking. In the third place, the new tonnage that it is proposed to lay down must be constructed with particular reference to prompt and economical conversion into auxiliary naval cruisers, and according to plans and specifications to be agreed upon by the owners and the Secretary of the Navy, and such steamships must be of sufficient strength and stability to carry and sustain the working and operation of at least four rifled cannon of a caliber of not less than 6 inches. In the next place, the officers and crews of the ships must be American citizens. And, finally, these steamers must carry the mails and have on board a sea post office.

Such are the principal requirements demanded of the owners of the Inman steamers. In return for their proper fulfillment the Government of the United States permits them to fly the national ensign from the flagstaffs of their steams, and, further more, offers them as compensation for complying with the many conditions above mentioned a subsidy, or bonus, or suovention—whatever name be preferred—of $4 per mile for every mile traveled on each outward-bound voyage from the United States.

A recently printed schedule giving the dates of departure of the City of Paris and the City of New York shows that the big ships are posted to make 18 departures from New York during the eight months' time covered by the schedule. This is at the rate of 27 trips a year, but as it is necessary for a ship to lay up once in a while for a thorough overhauling the total number of voyages per year for the two steamers will not probably exceed 20. Now, the distance from New York to Queenstown is stated by the United States Hydrographic Office to be 2840 miles. It therefore follows that the two big ships, after they become Americanized, will be jointly earning $227,000 annually.

A few words concerning the Inman and International Steamship Company may not be out of place at this time. The line was organized in England by William Inman under the name of the Liverpool, New York and Philadelphia Steamship Company, in the year 1850, about the time that the American Collins line came into being, and just ten years after the Cunard Company had inaugurated the first regular Transatlantic steam service.

At the very beginning the Inman line introduced a radical departure from the old order of things. Their first ship was the City of Glasgow, whose distinctive features were that her hull was of iron and her propeller the screw. The line ran from Philadelphia and touched at Halifax, and not until 1858 was New York made the port of call on this side of the Atlantic, at which time the Collins Company, the only United States line, went into liquidation.

From the start the Inmans were successful. They fitted their ships especially to carry third-class passengers and emigrants and easily outstripped all competition in this trade. During the year 1858 no less than 85,000 passengers were carried. In 1873, by the addition of two ships of 4600 tons each and 13 knots speed, the Inmans became the rivals of the Cunarders, the champions of the sea. In 1875 the City of Berlin, the largest ship of her time, was put on the Inman line. The next important step was made in 1881, when the City of Rome, the Jumbo of the seas, of 8100 tons and 15.5 knots, was added to the fleet. But this leviathan proving too slow was discarded. Finally, to crown their work, the Inman Company in 1888 astonished the world with the City of New York and City of Paris—the two ships we hope shortly to possess. Some of the particulars of these vessels are as follows:

Dimensions	Length	560 feet.
	Breadth	63 feet.
	Depth	43 feet.
Proportion of length	To beam	8.89
	To depth	13.02
Draft of water		21 feet 6 inches.
Displacement		13,000 tons.
Gross tonnage		10,499 tons.
Cylinders	Diameter, two 45 inches, two 71 inches, two 113 inches.	
	Stroke	60 inches.
Boilers	Heating surface	50,265 sq. feet
	Grate area	1,293 sq. feet.
	Working pressure	150 pounds.
Indicated horse-power		20,6 5
Speed on trial		21.8 knots.

The City of New York was the first of the two launched, and was the first merchant deep sea ship fitted with twin screws. She and her sister were both built by the Clyde firm of James & George Thompson, and a noteworthy fact in this connection is that within a year and a month of the signing of the contract the City of New York was given her first trial.

It has been stated that the "Cities," as the two Inman fivers are often called, were the first merchant steamships to be fitted with twin screws; they were also the first ships to be provided with an improved system of bulkheads and double bottoms, looking directly toward the greater safety of the ship herself in case of accident. There are 20 separate and distinct water-tight bulkheads in each ship, extending from the keel to 18 feet above the water line, and the only way of getting from one of these compartments into the other is by ascending to the upper deck. The double bottoms are a safeguard against any damage of a serious nature that might happen were the ship to take the ground.

Each ship is fitted with two complete sets of triple expansion engines and machinery, and either set is capable of driving the vessel at a moderate rate of speed. How invaluable such an arrangement is was demonstrated when the City of Paris broke down a couple of years ago. The coal capacity under ordinary circumstances is something like 3000 tons per ship, and the amount each one of them consumes daily when steaming through the broad ocean at an average speed of 20 knots is close upon 330 tons. As indicative of the great size and capacity of these immense steamers, it can be stated that each one of them can accommodate as many as 1500 passengers, of which 500 are first class, and still there is room left for stowing some 3000 tons of cargo. Finally, the cost of such a ship has been given as $2,000,000.

Of course there are many other interesting details, such as the forced draft system, the patent rudder, the electric plant, &c., that might be given, but enough has been said to show the character and value of these two big ships now shortly to become the property of the United States, subject to our laws, under our flag and that we must protect. And while regret must be expressed that thus far we ourselves have produced nothing at all comparable to these models of ocean architecture, yet every one must feel rejoiced that their coming to us will bring our own native talents into the foreground so that American ships of equal qualifications and probably superior speed and model will result.

Progress of the Basic Process During 1891.

The world's total production of steel and ingot iron from phosphoric pig iron during the 12 months ended December 31, 1891, amounted to 2,880,535 tons, being an increase over the production for the previous 12 months of 277,452, or nearly 10 per cent., and making the total output of basic steel to that date 16,328,500 tons. Of the above mentioned production of 2,880,535 tons, there were made by the basic Bessemer process 2,375,779 tons, and by the basic open-hearth process 504,756 tons. Of the basic Bessemer make, 1,700,200 tons contained under 0.17 per cent. of carbon and of the basic open-hearth make 346,358 tons contained under 0.17 per cent. of carbon. The production of the various countries for the 12 months ended December 31, 1891 and 1890, respectively, was as follows:

	1891.		1890.	
Countries.	Totals.	Under 0.17 carbon.	Totals.	Under 0.17 carbon.
	Tons.	Tons	Tons.	Tons.
England	436,261	350,818	503,400	351,404
Germany and Luxemburg	1,779,779	1,314,781	1,493,157	1,188,241
Austria	241,212	95,907	202,315	114,857
France	255,401	173,880	240,638	175,550
Belgium, Russia and the United States	187,882	111,172	163,573	111,963
Total	2,880,535	2,046,558	2,603,083	1,892,015

In Germany the basic steel produced during 1891 equaled 75 per cent. of the total steel made in that country. In England it equaled only 13.8 per cent., although five sixths of the iron ores of Great Britain can only be made into steel by this process. The basic slag produced amounted to some 700,000 tons (containing about 36 per cent. of phosphate of lime), nearly the whole of which was used as a fertilizer.

The Nason Mfg. Company, 71 Beekman street, New York City, are in receipt of an elaborate report from the well-known heating engineer William J. Baldwin, who has made an evaporative test of their No. 3 Equator steam boiler. The report begins with describing the boiler, which is of the drop-tube type, and gives detailed measurements, showing that the total effective surface of boiler, not including the top of dome, is 95.625 square feet. Suitable arrangements were made for weighing the water as it was delivered to the boiler, and the blow-off was so attached that the pressure of steam maintained during the test was very little above atmosphere. Care was taken to remove any water mechanically carried off by the steam and return it to the boiler for re evaporation. When everything was prepared, the fire was started and burned 1¾ hours to maintain an average condition, at which time the test began. In the next 7¾ hours 1454 pounds of water, ranging from 58° to 60° F, was put in the boiler. During that period the net amount of combustible used was 145 pounds. The deductions from the test after making proper allow-

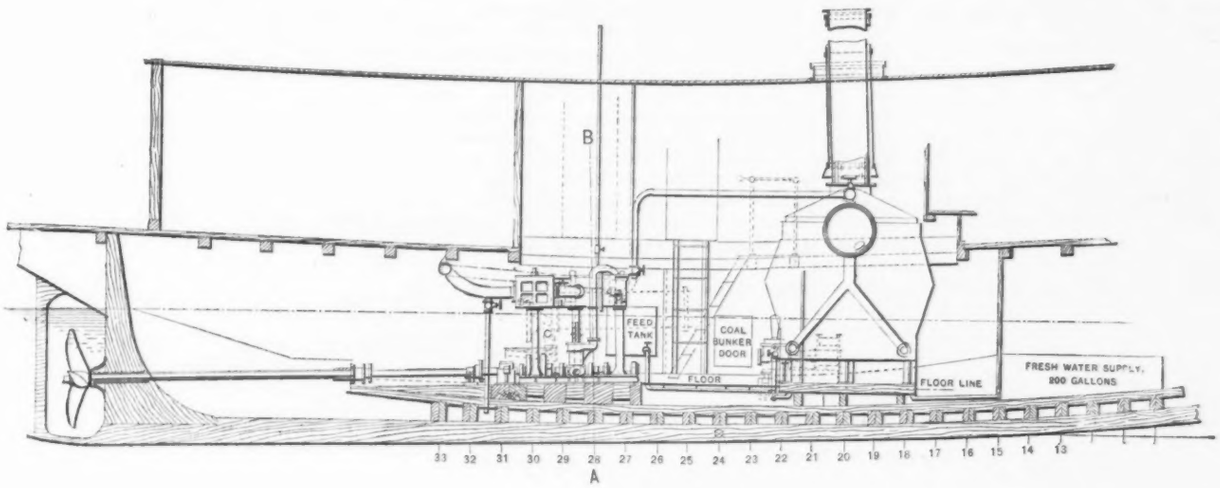
ance for temperatures, &c., show that the boiler evaporated 11.57 pounds of water at 212° to steam at about 213° for every pound of coal, which is a record that will command attention from those who are conversant with steam boiler performances.

Mr. Baldwin gives some other interesting deductions in this report. Accompanying it are illustrations of the boiler itself, and of the testing apparatus, that make the whole matter clear.

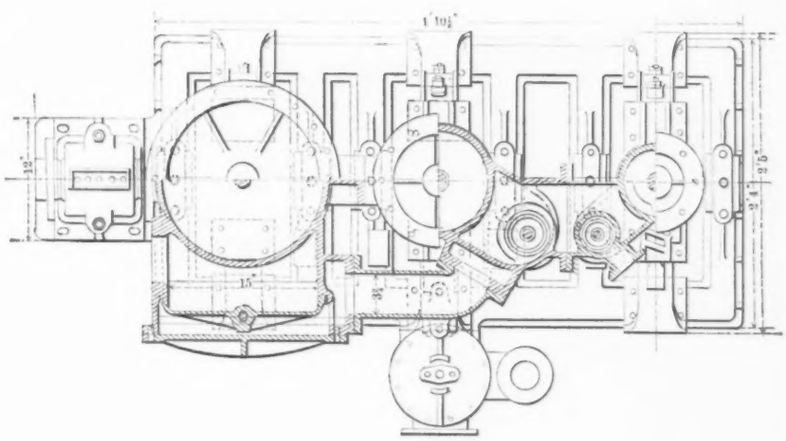
A consignment of camel skins, received in this city lately, may be the beginning of an important trade.

United States Ferry Boat.

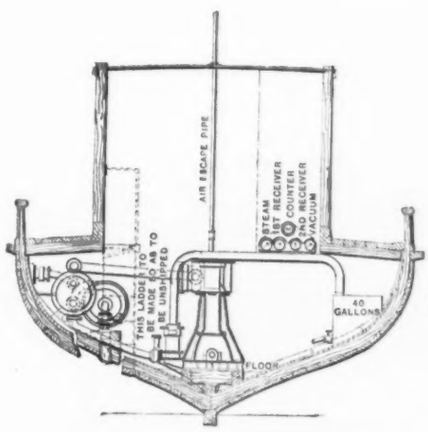
This boat—of the principal features of which drawings are here presented—is intended to run between the city of Portsmouth, N. H., and the Navy Yard. The boat has a displacement of 40 tons and is propelled by a single screw driven by a triple-expansion engine having cylinders 6½, 9¾ and 16 inches in diameter, the stroke being 10 inches. The steam follows seven-tenths stroke in each cylinder, and at 300 revolutions the indicated horsepower is 100. The engine is condensing and is provided with a cylindrical surface condenser of copper and brass tubes. The condensing water is supplied by a centrifugal pump of 15 inches diameter driven by a vertical engine 2 inches diameter of cylinder by 1½ inches stroke. The air pump is connected to the crosshead of the intermediate cylinder and is 6 inches in diameter and 5 inches stroke.



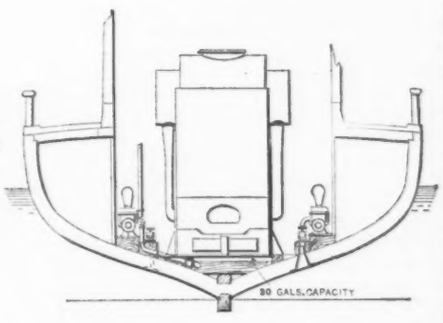
Part Longitudinal Section.



Sectional Plan of Engines.



Section through Engine Space.



Section through Boiler Space.

UNITED STATES FERRY BOAT.

The valve gear is of the Marshall type, with compensation rock shaft arms to equalize the distribution of steam at the upper and lower end of the cylinders. The high and intermediate pressure cylinders have piston valves, the low pressure cylinder being provided with slide valves. The engine is furnished with independent feed pumps.

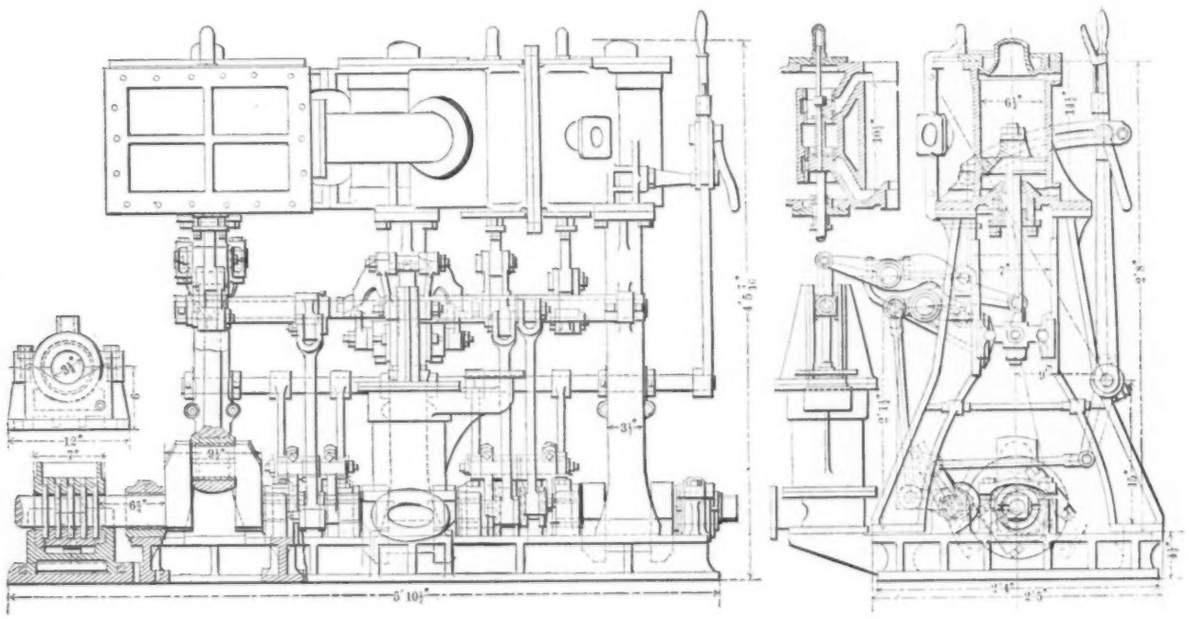
The Towne boiler, as shown on the general arrangement of the ferry boat's machinery, consists of a fire box surmounted on four sides by a double casing, the space between the casings being filled with water. From end to end of the fire box, tubes in vertical groups pass on an inclination from the lower half of one end to the upper half of the other. These tubes alternate in rows, the first row having an opposite inclination to the second, &c. Across the upper part of the fire box in the crutch formed by the crossing tubes the drum or separator is laid, the ends of which project beyond the sides of the boiler. Tubes are led from the upper part of the water box to the drum, and a pipe at each end of the drum outside of the water space connects the bottom of the boiler and the drum. In the inside of the drum deflecting plates are fitted over the mouths of the cross pipes, throwing the water which comes into the drum from below to the bottom. In addition to these are other deflecting plates, and a dry pipe to further insure dry steam to the engine. The feed pipe is arranged to return several times through the uptake, forming an economizer or feed-water heater.

The outer shell opposite the tube ends is perforated with a hole larger than the tubes through which access can be had to the tube end. All the tubes are perfectly straight, and are as easily set as the tubes in a locomotive boiler. The holes opposite the tube ends are closed in the former boilers either with screw plugs or with plates, but now an improved form of plug is used.

The operation of the boiler is as follows: The water in the space around the fire box is about the hight of the upper ends of the inclined tubes. The water being heated rises through the inclined tubes and a mixture of steam and water enters the drum through the cross tubes, which is deflected and separated by the plates inside the drum. The steam goes to the

engines through the dry pipe, while the water descends the down cast pipes at the end of the drum to the bottom of the boiler, and entering the lower end of the tubes again makes the circuit. The boiler, is built in another form with only the sides as water spaces, the ends being of fire brick and iron. This form is made principally to avoid flanging the sheets and can be built considerably cheaper. This boiler has been in use for nearly three years in the small boats of the navy and has given the greatest satisfaction.

It is a tubulous boiler, yet it is not of the extreme kind composed of piping alone, but it may be called a "conservative" tubulous boiler, a compromise between the pipe boiler and the common locomotive boiler. It weighs about 16 pounds per square foot of heating surface and is very compact, and is especially fitted for high forced draft by its ex-



Side and End Sectional Elevations of Engines.

UNITED STATES FERRY BOAT.

cellent circulation. It is manufactured by J. Beaver Webb, 45 Broadway, New York.

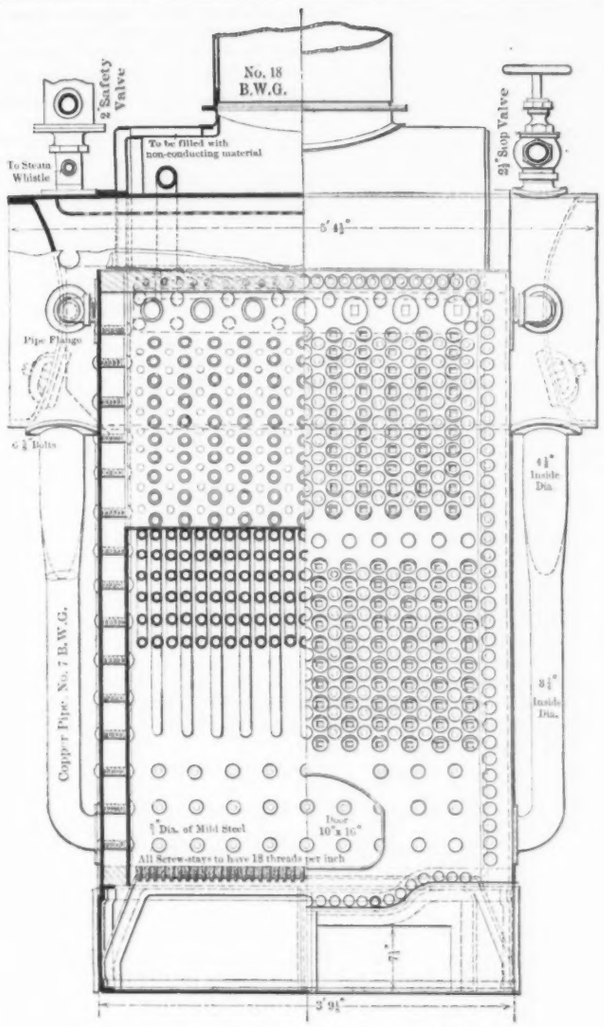
An English View of Tin-Plate Developments.

The London *Iron and Steel Trades Journal* for May 7 says editorially:

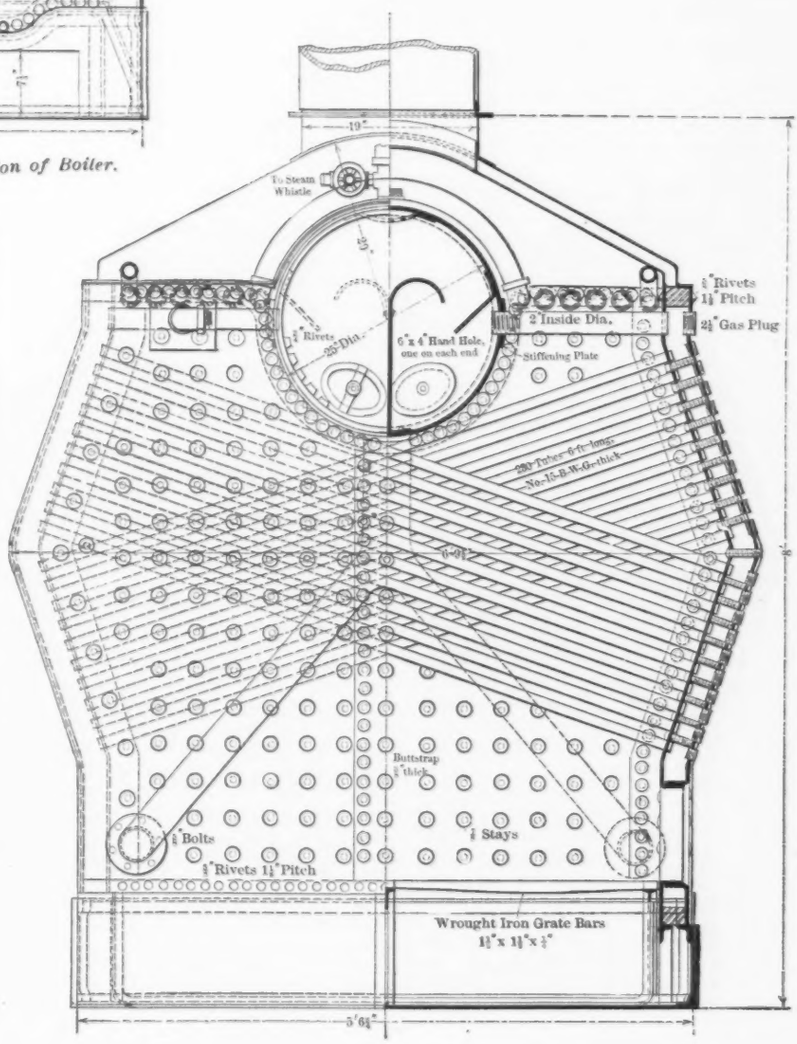
It is now definitely announced that Messrs. Morewood & Co. of the South Wales Works, Llanelly, have concluded arrangements for the erection of an extensive works in America for tinning black plate. J. H. Rogers recently issued a warning letter to the tinhouse men, telling them to be on the lookout for other occupations. At the time it was suggested that wages were to be lowered, and that Mr. Rogers was writing with this in view, but it seems he had something still more definite before him. W. H. Edwards of Morriston is also going to the States to put in operation a number of his father's (Daniel Edwards) patent tinning machines, and it does seem that for a time at least the McKinley tariff will make it more profitable for some of the Welsh firms to conduct their tinning operations on the other side. But in this connection we must remember that both Mr. Rogers and Mr. Edwards have a machine business to develop, and have a grand opportunity now for pushing it in America, though it may be that the Americans will not be content to continue paying the double duty for the sake of the tinning business. If black plate is not to be rolled, we do not think the tin-plate clause in the McKinley tariff will long remain unrepealed, and those best able to judge opine that the black plate for the American market will continue to be made in South Wales. Daniel Edwards, interviewed this week on the subject, said:

"Without being too sanguine, I have every confidence that these machines will do what is claimed for them, and that they will go a part, if not all the way, to meet the competition we anticipate from our American cousins in the introduction of improved machinery for the manufacture of tin plates. These inventions have been in hand since the beginning of last year, and, as you suppose, are intended to displace the two workmen I still retain at my tinning machine, viz, the tinman and riser. You will, perhaps, recollect that in December, 1890, the tinhouse men at these works, in opposition to the candid advice of their own leaders, struck against the continued working of my patent machines, and I was then threatened that unless they were replaced by the old method the works would never restart. I was thus, in a manner, driven into a corner, and had to look for a way out of the difficulty, and the result is seen in these appliances. There are three distinct machines comprised in the invention, the one doing the work of the tinman by taking the wet plates one by one from a pile placed in front and pushing it into the tinning pot. The second takes the plate from the first pot, lifts it over and passes it into the other pot. The third (riser) receives the plate on its emerging from the second pot in its finished state, carries it over and deposits it gently into a horizontal traveling rack, from which it is permitted to be taken by a cleaner, either manual or mechanical. Such, in brief, is the work performed by these appliances. The one great difficulty we had to contend with in the 'tinman' was to separate the wet plates one from the other, and insure not more than one being taken at a time. This has been got over so satisfactorily that the 'wetter' the plates are the surer is the action of the separator. The motion of the 'tinman' is continuous, and irrespective of whether there are plates ready for it to take up or not, whereas the 'washman' and 'riser' are purely automatic, and are at rest until a plate in passing through rises and sets them in motion. A feature of the riser is that in the event of any derangement of its working parts it throws itself automatically out of gear, thus guarding against any possibility of breakage or damage of any kind. We have applied for a patent, and are now perfecting an appliance by means of which we will insure the temperature of the metal being maintained at one given point under every condition. To keep the pot at a certain degree of heat at present is an absolute impossibility, as a little carelessness or neglect on the part of the workmen in charge will cause the tin to become over or under heated, with the result that the coating of the plates will be defective." The fear of American competition, if not the substance of it, will stimulate our makers to develop improvements that were ignored while little Wales was secure in its monopoly of the tin-plate trade.

Some time since J. W. Nesmith of Denver assumed the initiative in urging the establishment in Colorado of large iron and steel works, having specially in view its location at Denver. Public meetings were held in which Mr. Nesmith spoke at length on the subject. Since that time nothing has again reached the public in regard to the matter. Nevertheless, a good deal of preparatory work has been done and is still going forward. For upward of a year an expert has been employed in visiting all known local deposits of iron ore and coal and looking into new discoveries reported, Mr. Nesmith himself often taking a part in the examinations. Hundreds of analyses of ore and fuel have been made and a vast amount of information has been collected. The wisdom of such a course is apparent. Those interested in the movement thoroughly appreciate that iron and steel must be manufactured cheaply in Colorado to compete with other sections of the country in which iron and steel manufacturing has been long established. When the certainty has been reached that a Denver



Transverse Section and Elevation of Boiler.



Longitudinal Section and Elevation of Boiler.

UNITED STATES FERRY BOAT.

plant has the proper basis for a prosperous existence the building of a very large plant will be undertaken.

Mesaba Range News.

The leases of the Cincinnati and Kanawha mines, of which mention was recently made, have not been accepted by the stockholders of the companies, contrary to general expectation. In each case the ground of refusal was the same, that the sub lessees, P. L. Kimberly & Co., were not bound to take out all the ore in sight on the properties during the term of the contract, nor were they bound by any forfeit to continue their contract should they desire to throw it up. The stockholders of the mining companies, who are themselves leaseholders, wanted a binding contract that all the ore would be mined before the properties should revert to the fee owners. The Cincinnati property is under consideration for lease by other parties, of whom it is said the Minnesota Iron Company is one, and large local purchasers of the stock, who also have interests on the Menominee, are others. It is probable that this property, as well as the Kanawha, will soon be leased to actual miners.

A find of blue hematite has been made in the Ohio Mine, of which ex-Governor Campbell of Ohio is president, assays of which go as high as 64 37 iron to 0.028 phosphorus and 4 0 silica These are said to be from random selections, and the assays are the best, all things considered, ever made from Mesaba ores. The Kimberly party is endeavoring to lease this mine, but it is likely to go to Messrs. Himrod, Crerar, Clinch and others of Chicago, who are operating the new Duluth blast furnace. Excellent finds have been made on the Champion in township 58-18, and in the Bessemer in 55-19, but in both cases water has so seriously interfered that pumps must be put in before any further developments can be made. The early claim that the Mesaba range mines were so dry as to require no pumping has already proved false.

Dirt is flying on both the roads building to the range and both expect to be running trains by August 1. Developments on the Canton property, to which the Duluth and Iron Range will build, are not to begin on a large scale until after the road is able to haul in machinery. It will be, it is said, one of the best mines in the range.

The Pelton Water Wheel Company of San Francisco are constructing a water wheel 36 inches diameter, to operate under a head of 2100 feet, or a pressure of more than 900 pounds per square inch. The wheel is to run at 1150 revolutions per minute, and have a speed at its periphery of 10,805 feet per minute, which is at least one-third faster than circular saws are driven. The wheel is to be placed in one of the Comstock mines, and, in addition to the depth of the mine, is to be fed from the Virginia water mains, which have a pressure of 198 pounds to begin with. The diameter of the jet will be only 0.15 inch, or about $\frac{5}{32}$ inch. The wheel will be of solid steel, a tempered plate $\frac{3}{8}$ inch thick. It is a remarkable case, and will be watched with much

interest. Various kinds of phenomena will, no doubt, arise, and in respect to erosion of the surfaces, especially of the nozzles. This will be by far the greatest head or pressure ever applied to a water wheel.

Labor Organizations.

We reprint below a part of the report of Committee No. 4, on Labor Organizations, which was presented at the recent convention of the National Association of Stove Manufacturers at Chicago, by Henry Cribben, chairman of the committee:

After the panic of 1857 manufacturing and commercial business of every kind in the United States became very much depressed. Manufacturers and merchants reduced the wages of the men in their employ to the point of a bare subsistence, as the wages paid at the time will conclusively show:

Carpenters, 90 cents to $1.12 per day.
Machinists and blacksmiths, $1 to $1.25 per day.
Cabinet makers, 85 cents to $1 per day.
Molders, $1 to $1.38 per day, according to skill and ability.
Locomotive engineers, $1.38 to $1.75 per day.
Firemen, 80 cents to $1 per day.
Male school teachers, $35 to $50 per month.
Female school teachers, $16 to $20 per month.
Laborers, 65 to 75 cents per day.
Stove molders working by the piece earned from $1 to $2 per day, and in a few locations $2.25 to $2.50.

Organization of Labor Unions.

The date when the first trade or labor union was organized in this country we are unable to say. We do know of their existence in isolated cases in large trade centers like New York, Boston, Philadelphia and Albany in 1825. The printers' union is no doubt the oldest, assuming a national character early in the 50's. The Molders' Union, the one in which our interest is greater than in any other, was organized in 1859, and as we were one of the charter members, we can explain the causes that led to the organization of that union.

As stated, in 1857 manufacturers and merchants reduced the wages of the men in their employ to a bare subsistence, as the wages quoted as paid at that time conclusively show. Money was very scarce and difficult to obtain, and had we received our pay, poor as it was, in cash, we would have been in a much better condition, but we received our pay one half or three-quarters in due bills or store pay; the small balance in money. This due bill was sold by the storekeeper to the manufacturer for cash or note with interest at 75 and 80 cents on the dollar, and then paid to their workmen in lieu of money, which they claimed was impossible for them to secure in exchange from the sales of their manufactured goods, thus reducing by fraudulent means the already low prices they professed to pay them for their labor. It is a notorious fact that the merchant gave the discount to the manufacturer in the sale of the due bills fully equal to their legitimate gross profits, and relied solely upon overcharging and giving short weight and measure to secure the profits on the goods to the purchasing workman. By these means the poor workman, who was then very poorly paid, even if he received his full pay in lawful money, was doubly defrauded by his employer, who paid him the bulk of his wages in due bills, which he bought at a discount, and on the other hand by the storekeeper by giving short weight and overcharging for the goods he delivered, thus defrauding and lessening his earnings at least 33⅓ per cent.

Fraudulent Systems.

Other fraudulent systems were in vogue at that time. For example, in many places outside of Albany and Troy the stove plate molders of the country made whole stoves and received credit for their work when the stove was mounted ready for the market, but received no credit for good work broken in the cleaning or mill room and mounting department. It was customary in many places for the shipping clerk to take the necessary castings off the shelf to fill orders for repairs without giving the molder who made them credit for the work so taken. This action on the part of employers soon brought about a crisis, and to prevent the further spread of these dishonest practices, men of common sense and ordinary intelligence came together to devise ways and means to put a stop to this system of plunder practiced upon them by both employer and merchant, and this led up to the organization of the Molders' Union in 1859. The thinking men among them believed that a thoroughly organized and properly conducted union would give them the relief sought for and the power to counteract the wrongs practiced upon them, but still they hesitated to associate themselves with the mass of their fellow-workmen, whose education had been acquired in the school of adversity, many of whom were not reasonable men, and who through their ignorance favored force and even bloodshed to secure their object. With this element in the majority it is not to be wondered at that the more conservative among them, who believed that their union should be conducted on the principle of justice to employers as well as to workmen, hesitated to form unions, but finally were compelled to do so by the unjust action of the employers. The national body met in 1859 and adopted a declaration of principles in accordance with the views of the conservative members, and that declaration provides for the rights of both, but we regret to say has been violated many times since its adoption by the union.

Objects of the Molders' Union.

The objects as set forth were that each was to exert his influence for good among its members, teaching them to be honest in their dealings with each other and their employers, to keep and perform in good faith all agreements made by them, to instruct each other to become good workmen, and make them better men and better citizens. The union room was to be their schoolroom and used for the elevation of its members, socially, morally and intellectually, thereby qualifying them to meet their employers, and by intelligent argument and sound reasoning convince them of the unfair and unjust treatment they were receiving at their hands, and to insist upon better treatment in the future. The union was to be used as a means of making them familiar with the methods of doing business and figuring out correctly the cost of manufacturing the goods they were helping to produce, and by the association of their money and labor to engage in business for themselves, and in that way become their own employers. Strikes were to be used only as a last resort when reason failed to convince the employers that they should redress the wrongs they had practiced upon the men. They considered it justifiable to declare war when the employer refused to recognize their rights and refused to listen to their grievances.

Such were the principles advocated by conservative members of the union, who acted honestly and contended for the faith that was in them, and who should have received the aid and support of the manufacturers of that time, but I regret to say that such was not the case. But war was declared, and that warfare has been going on, regardless of the rights of each other, for the past 25 years, and it is only within the past few years that any reason or common sense has been shown by either side in the settlement of the difficulties that unavoidably arise in the conduct of our business, the success of which should be mutually desirable, as the interests are identical. It is impossible for the manufacturer to pay good prices for their work unless his business is successful and his workmen honestly co-operate with him for their mutual good.

Efforts of the Union.

The labors of the union for the first few years were confined principally to the abolishment of the systems of dishonesty named herein and practiced upon their members, in which they were successful, but not until the men were compelled to strike to secure their wages in lawful money and credit for their work when it was made each day. There were many other abuses then being practiced upon the men which are unnecessary to mention here; sufficient to say that the employers made such rules as they pleased for the government of their foundries, regardless of the feelings of the men in their employ, and oftentimes were as unreasonable as the Molders' Union has oftentimes been during the past 25 years. Had the stove and machine founders of the country in 1858–59–60 met the conservative men of the union, who were then at the front, half way and gave them recognition, they would have remained at the front and done good work for both sides, but they gradually dropped out of the business and the control of the union passed into the hands of the irrepressibles and has remained there until some two years ago, when there was a change in the administration of the union and a disposition shown on the part of its officers to again bring into use the declaration of principles as set forth by the original members of the union and it has been partially put in practice in several instances during the past year.

I do now believe that the time is coming and not far distant when certain stove manufacturers and their employees will meet together as reasonable bodies without feeling or prejudice and reason out their differences like honest men. It is a simple business proposition of profit or loss to both, and should be settled in a business-like manner.

Management of the Molders' Union.

There has been a marked improvement of late in the management and conduct of the Molders' Union, both local and international, of which we have strong evidence in their action during the past two years as compared with their action prior to that time, and we are satisfied if the good feeling that now exists is fostered and encouraged and the rights of each carefully considered and respected by both sides, a well conducted union with conservative leaders would be conducive to the best interests of the stove manufacturers of the country, but, like any other association of men, if the underlying principles, which are the foundation and the object of their existence, are prostituted, and they assume to deprive others of their rights, they become dictators and become an injury to themselves and to those who give them employment. This does not occur with labor unions alone, but takes place with associations of business men and of men following the varied professions, who often assume to assert their power, secured by organization, to interfere with the rights of others, and in every case it reacts upon them and they either recede from the position they have assumed or fall to pieces of their own weight, as public opinion, when it can

assert itself, will not countenance or sustain such action on the part of such organization.

The true way to make such organizations as labor unions beneficial and neutralize their power for harm is to meet them with an organization well equipped with reliable men and the necessary funds in the treasury to successfully cope with them, and my word for it, both sides will become more respectful and considerate of the rights of each other. When differences of any kind arise between them they will reason together, and by intelligent argument on the part of each, arrive at a satisfactory solution and adjustment of the differences existing between them.

To successfully accomplish the objects to be attained by the methods proposed, it will be necessary to bring to our assistance as the rule and guide of action that all men of either high or low degree have inalienable rights that should command the respect of the other, and do unto them as you would have them do unto you under like circumstances, and render unto the workman that which of right belongs to him, and at the same time see to it that you secure what of right belongs to yourselves, with an association behind you with power sufficient to secure it if you are compelled to call it into action. Then both sides will become beneficial and useful adjuncts of so-called modern civilization.

The Detroit Graphite Mfg. Company of Detroit, Mich., have established an Eastern agency at 233 Broadway, New York, under the charge of H. A. La Paugh. A full line of samples of the company's graphite paint will be kept on hand. The value of graphite pigment for paint has been known for some time, but only recently has it been procured at a sufficiently low price to bring it into general use. The claim is made that graphite paint is the most economical of the various kinds of paint made, as its covering properties are said to be from two to three times, pound to pound, that of any other paint in use. It is recommended by the manufacturers as equally good for exposed metal or wood surfaces.

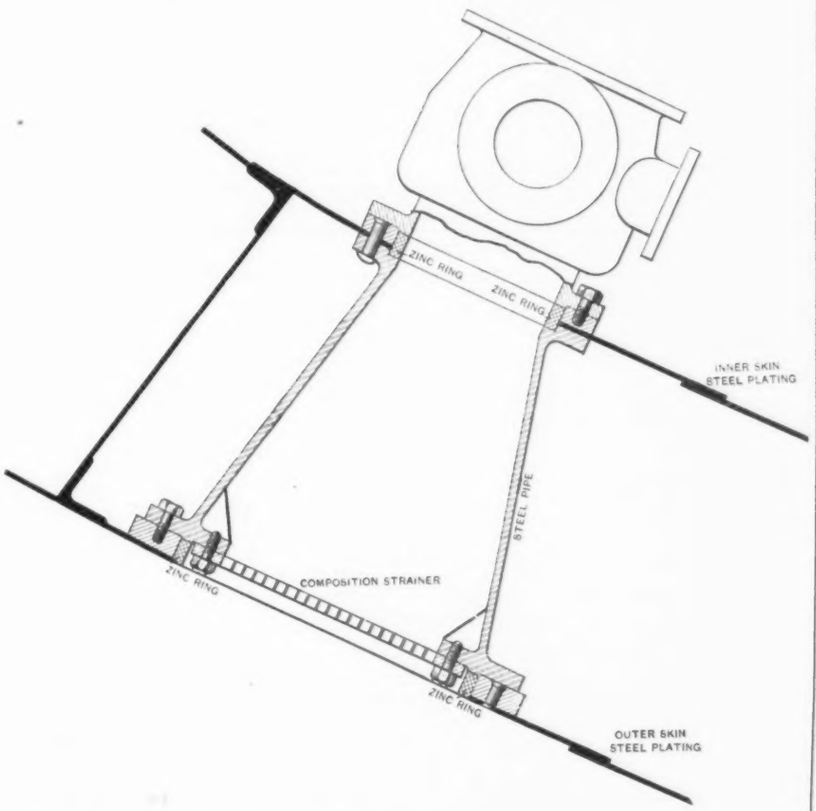
Attaching Sea Valves to Hulls of Double-Bottom Ships.

The practice is now universal of building steel and iron sea-going ships with double bottoms. The reasons are too obvious to give here, but the fact has materially complicated the work of attaching the sea valves to the hulls.

As the utility of the double bottom depends upon the completeness of each, it becomes necessary to so connect these valves as not to interfere with or lessen the advantages of the system; and as the valves themselves must be at all times accessible (and therefore within the inner skin), a passageway from them to and through the outer skin must be built of a substantial and permanent character, embodying in its details means for the protection of the hull plates against galvanic action, when composition strainers are used to cover the outer opening, or when the valves are made of a copper mixture.

The accompanying drawing shows a method of accomplishing the ends desired, as followed by some of the largest iron shipbuilders, and may be described as follows: Between the inner and outer skins of the ship a conical cast-steel pipe is fitted, resting on a heavy forged steel base ring, to which it is bolted and which permits of calking and adjustment. The upper end of the cone is riveted to the inner skin and also to a second forged steel ring on the other side of this skin, and upon which the valve is bolted. Beneath the valve is fitted a zinc ring resting on the upper edge of the conical pipe, and a similar ring is also fitted to the bottom of this pipe and held in place by brass screws. These rings are designed to prevent any destruction of hull plates by the galvanic action set up between the steel and composition. A strainer is bolted over the outside of all suction valves, as shown, being secured to lugs cast on the inner circumference of the conical connecting pipe.

It is readily seen that this arrangement adds strength to the hull also, as the pipe is a structure of considerable stiffness and acts as a brace as well as serving its primary purpose.



ATTACHING SEA VALVES TO HULLS OF DOUBLE BOTTOM SHIPS.

The Largest Sailing Ship.

The sailing ship Maria Rickmers, recently launched at the Russell yards, at Port Glasgow, Scotland, is claimed to be the largest sailing ship in the world. She is 375 feet long, with a breadth of beam of 48 feet, draws 25 feet of water and has over 30 feet depth of hold. Her net tonnage is 3822 and over double that in carrying capacity. She is built of steel, with a double bottom all fore and aft, with a deep midship tank for carrying water ballast. She is rigged as a five-masted bark. An unusual feature in her construction is that she is fitted with auxiliary triple-expansion engines and machinery of sufficient power to give her a speed of about 7 knots during calms and very light winds. She is provided with a double-bladed feathering propeller wheel, which does not interfere with her steering qualities when moving under sail alone.

The Maria Rickmers was built for the firm of Rickmers & Co., rice millers, of Bremen, Germany, and will be used in the rice carrying trade between Burmah and Bremen. She is now at sea on her maiden voyage from Glasgow to Singapore. As compared with the big American ship Shenandoah, the Maria Rickmers is 50 feet longer, 1 foot less beam and has the same draft as the Shenandoah. At the same time, she carries nearly 4000 more yards of canvas and has a much larger tonnage. The Shenandoah is now the third largest sailing vessel in the world, although undoubtedly the largest wooden vessel afloat. The nearest competitor to the Maria Rickmers is the huge five masted sailing ship La France, which is the same length, 375 feet, is 1 foot wider, but has less draft and is in net tonnage 222 tons less. It is claimed for the Maria Rickmers that she can make from 13 to 15 knots an hour with sail power alone. Her steam power is purely auxiliary and is only to be used in case of calms. Her speed yet remains to be determined, however, and her ability to make what she claims is doubted by sailors on this side of the globe.

Wheat Statistics. — Already much speculation is indulged in respecting the probable yield of the growing wheat crop, the general conclusion being that whatever the result another crop equal to that of last year can hardly be expected, and perhaps cannot reasonably be desired. A large proportion of the old crop is still in the granaries. The country has already exported about 193,000,000 bushels, flour included, during ten months of the crop year, against only 85,000,000 bushels during the same months of the previous crop year. Yet this change of over 108,000,000 bushels in the foreign demand has by no means exhausted the supply. It is calculated that about 77,000,000 bushels could still be exported without reducing the stock to the minimum quantity carried over ten years ago. But there is little probability that more than about 25,000,000 bushels will be sent abroad before July 1, so that there will be a surplus of 50,000,000 bushels or more in excess of the minimum stock to be carried over in the next crop year. The value of the breadstuffs exported in the last ten months amounted to $253,065,000.

Freights on Southern Pig Iron.

The Queen and Crescent route has issued Eastbound pig iron tariff No. 2, effective May 15, giving rates on pig iron in carload lots from Southern furnaces to points in the Northeast. The rates to some of the more important points are given below:

To	Per ton 2268 pounds. From Dayton, Rockwood and Chattanooga, Tenn.	From Birmingham district.	From Decatur, Florence and Sheffield, Ala.
Delaware.			
Wilmington	$4.66	$4.31	$4 41
Maryland:			
Baltimore (rail and water)	3.90	3.86	....
Baltimore (all rail)	4 15	4.11	.....
Sparrow's Point	3.95	4.20	4.30
Pennsylvania:			
Allentown	4.36	4.61	4.71
Altoona	4.43	4.68	4.78
Bellefonte	4.56	4.81	4.91
Bloomsburg	4.54	4.79	4.89
Catasauqua	4.50	4.75	4.85
Conshohocken	4.01	4.31	4.41
Danville	4.29	4.54	4.64
Easton	4.36	4.61	4.71
Harrisburg	3.52	3.77	.....
Lancaster	3.91	4.16	4.26
Lebanon	3.78	4.03	.....
Philadelphia (rail and water)	4.05	4.01	.....
Philadelphia (all rail)	4.45	4.31	.....
Pottstown	4.06	4.31	4.41
Pottsville	4.30	4.55	4.65
Reading	4.06	4.31	4.41
Scranton	4 64	4.89	4.99
Steelton	3.65	3.90	.....
New Jersey:			
Camden	4.36	4.61	4.71
Jersey City (rail and water)	4.05	4.01	....
Jersey City (all rail)	4.65	4.61	.....
New York:			
Albany	5.60	5.85	5.95
Elmira	4.46	4.71	4.81
New York (rail and water)	4.05	4.01	.....
New York (all rail)	4.65	4.61	.....
Oswego	4.70	5.20	4.95
Rochester	4.40	4.90	4.65
Massachusetts:			
Boston (rail and water)	4.40	4.36	.....
Boston (all rail)	5.98	6.09	.....
Worcester	6.00	6.25	6.35
Connecticut:			
To all points	6.00	6.25	6.35
Rhode Island:			
Providence (rail and water)	4.40	4 36	.....
Providence (all rail)	5.98	6.09	.....
Vermont:			
Rutland	6.00	6.25	6.35

The approval by the London Lloyd's of the general principles of the American whaleback system is taken as good evidence that this type of steam vessel has come to stay. In the opinion of some of the authorities there are certain features of the present design of American whaleback which render it not as efficient as it might be for commercial purposes on the high seas. The spoon-shaped bow, the want of proper means of communication from end to end of vessel, the cramped facilities for navigation, the absence of sail power, and the want of proper arrangements for rapidly reaching the hold when carrying bulk cargoes are the objections urged against this style of vessel, but they are of a nature to be easily remedied. Against these objectionable details of construction there is to be noted the saving in the weight of materials in building, the largely reduced surface on which the sea can exert its force, and the gain in space secured by placing the engines in the rear part of the vessel, all considerations of the greatest importance when the earning power of the ship is in question.

Electrical Forging and Tempering.

The drawings here presented show three styles of electrical apparatus for heating metals for forging and tempering, designed by E. E. Angell, superintendent of the Electrical Forging Company of Boston, Mass. The electric forge represented in Figs. 1 and 2 is intended for heating bars of metal for forging, hardening, drawing the temper or other purposes. The frame consists of a hollow cylinder supported upon four legs and provided at its top and bottom with a series of slots and with external lugs adjacent to the slots. Electrode levers, indicated by the full lines B C and the dotted lines are pivoted to the lugs, and their long arms extend through the slots to a point near the axis of the cylinder. Other electrode levers, D E, are similarly disposed in a horizontal plane. All the levers are provided at their outer ends with binding posts and at their inner ends with anti-friction rollers composed of conductive material, the fusing point of which is above that of the bar to be heated. Springs are so arranged as to bring the inner ends of the levers toward each other for grasping the bar to be heated.

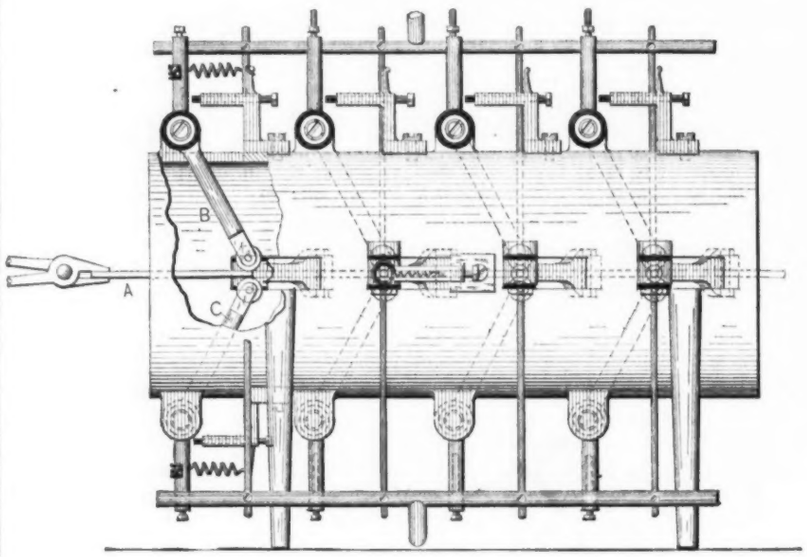


Fig. 1.—Side Elevation of Electric Forge.

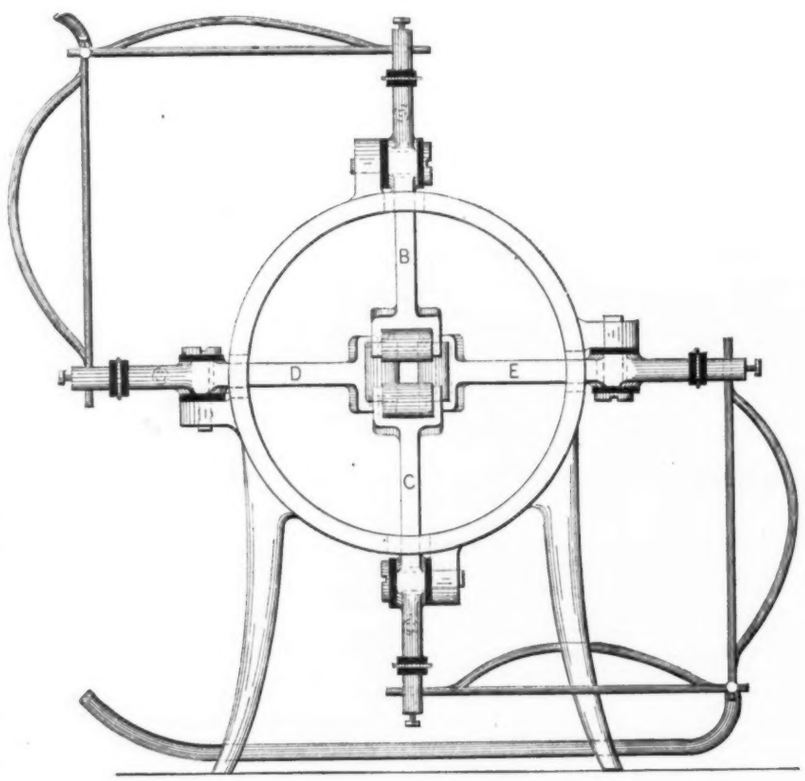


Fig. 2.—Front Elevation of Electric Forge.

ELECTRICAL FORGING AND TEMPERING.

In the use of this apparatus a bar to be heated may be grasped at one end by a pair of tongs and thrust into the forge be-

tween the rolls of the first pair of electrodes. The metal of the bar closes the circuit between the rolls and causes a transverse current to pass vertically through the bar. As the bar is thrust further into the forge it passes between the rolls of the horizontal electrode levers, and a transverse current is caused to pass horizontally through the bar. When short bars are to be heated or a bar is to be heated a short distance at one end, one or two pairs of electrodes only may be utilized, the other electrodes remaining idle; but in heating a long bar the entire series of electrodes may be brought into play. The bar is reciprocated by the operator or by mechanical means while it is between the rolls, so as to distribute the heat throughout its length. The inner arms of the electrode levers are sufficiently inclined to prevent the binding of the rolls upon the rods in withdrawing the bar. The springs cause the electrodes to yield and automatically adjust themselves to bars of different sizes. If it be desired to pass currents longitudinally through the bar, the wiring to the electrodes may be changed, so that all the vertical electrode levers will be connected with the positive pole and all the horizontal electrode levers with the negative pole.

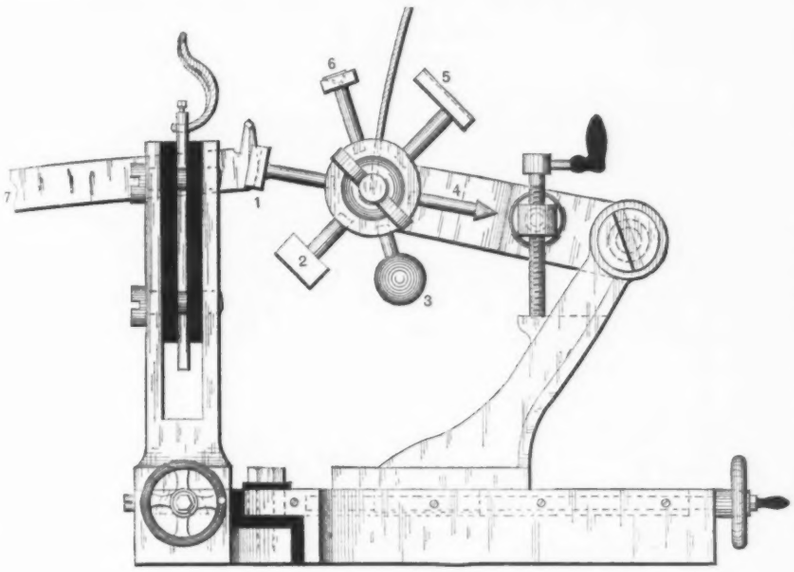


Fig. 3.—Electric Forge for Heating Tools, &c.

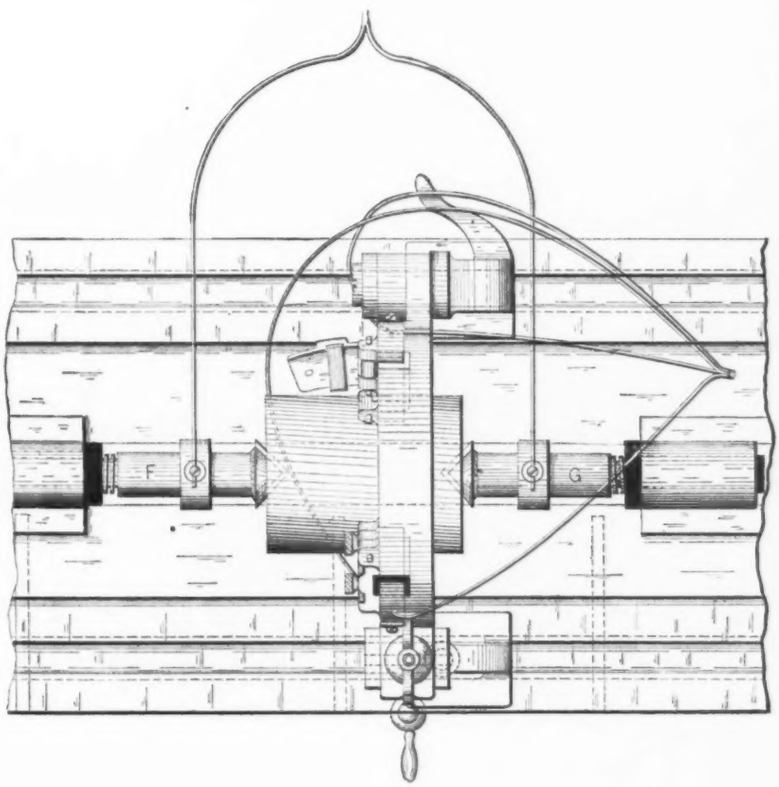


Fig. 4.—Plan View of Electrical Heating Apparatus.

ELECTRICAL FORGING AND TEMPERING.

Electric Forge for Heating Tools, &c.

The next drawing, Fig. 3, shows an electric forge arranged for heating lathe tools, pickaxes and implements of irregular shapes for the purpose of hardening, forging or drawing the temper. The general arrangement of the frame and the method of separating it by proper insulating material into two parts are clearly brought out in the cut. Carried upon the free end of an arm pivoted in the forged end for standard is a hub formed with radial arms 1, 2, 3, 4, 5, 6, of highly conductive material. The ends of these arms are formed with contact heads of different shapes for contact with tools of different characters. The tool to be heated, 7, is held in the upper end of standards. Then the hand wheel shown in the right hand corner is turned so as to bring the inclined standard to the proper position, when the arm carrying the hub is adjusted to the proper hight by the adjusting screw. The electrode wheel is then rotated so as to bring the electrode arm having the contact head adapted to fit the particular tool to be heated into contact with the tool. This closes the circuit through the tool, which is then heated instantly. The tool is then removed and another put in its place and the operation is repeated.

Electrical Heating Apparatus.

The remaining drawings represent a device for heating mandrels, milling cutters, taps, reamers, twist drills and similar articles preparatory to hardening and tempering. The construction of the machine will be understood as we explain its operation. The upper section of the ring-shaped electrode support A, Fig. 5, is swung back into contact with a stop on the side of the rear standard and a milling cutter, as shown, or other device to be heated, is placed endwise between the electrode spindles F and G, Fig. 4, the spindle yielding slightly under the action of springs to permit the adjustment of the article to be heated. The upper section of the ring-shaped holder is then closed and locked. The electrodes *a a* are then adjusted, so that their ends come in contact with the sides of the article to be heated, and clamped in position by means of hinged clamping plates. The electric currents are then switched on and enter the ends of the article through the supporting electrode spindles F and G and pass out laterally or radially through the sides of the article by means of the stationary electrodes *a a*. In order to heat the article uniformly throughout its length the operator turns the crank alternately in opposite directions, whereby the carriage carrying the electrode spindles is reciprocated, causing the work to be moved back and forth, and the points of lateral contact of the stationary electrodes to be shifted longitudinally along the work. The direction of the currents may be reversed or shifted. To avoid short circuiting of the entire current through either of the branches of the positive cable during the reciprocation of the carriage and the electrode spindles, means are provided for equalizing the distance through which the currents passing through the branches travel. In Fig. 6 a disk-shaped cutter is interposed between the ring-shaped faces of the flat-headed electrode spindles.

The new dry dock at the Brooklyn Navy Yard, for which a contract will soon be awarded, will be 625 feet long, the largest in the country. It will be closed with a steel floating gate or caisson, which will be a double-ended hull, similar to the forward end of a ship. The caisson will be 108 feet in length at the top and 71 feet long at the bottom, 25 feet in breadth and 35 feet in hight. The dock pumps will have a capacity to discharge 3000 gallons of water per minute. The engine will be of about 45 horse-power.

WORLD'S FAIR NOTES.

Exhibit of the Frick Coke Company.

Chief Skiff of the Mines and Mining Department announces that one of the notable exhibits in his department will be a working model of the entire plant of the H. C. Frick Coke Company. Already the contract for making the model has been awarded to the Jones Bros. Electric Company of 30 Court street, Cincinnati, who are experts in model making. The estimated cost is between $3000 and $4000.

The model will be on a scale of one-twentieth of 1 inch to 1 foot, covering a space of about 20 x 50 feet, and will be an exact representation of the Frick works, including engines, boilers, piping, elevated tracks, hoists, cupolas, ovens, cars and all other machinery used in the big plant at Scottdale, Pa. The machinery will be in operation, the motive power being electricity, with gas for the ovens, the coke therein being represented by asbestos prepared so as to resemble the article manufactured by the concern.

The model will represent a section of one of the shafts, extending from the floor to the top of the stand, with self acting tralls, bins, cages, winding apparatus, engine and boiler houses, with their machinery workshop and power plant. There will also be shown several tenement houses and a block of ovens, with charging engines, railway tracks, &c. The company will also exhibit samples of their products and a topographical chart of the Connellsville district, showing the location of the company's property and plants.

Chief Skiff is enthusiastic over the enterprise of the Frick Company, as their determination to put in a working model is different from that of most coal and coke manufacturers, whose sole ambition in fair matters seems to be a desire to show the biggest block of coal ever taken out of a mine. A prominent position in the Mines Building will be given the Frick Company, and the representatives of the company are now looking up the available space for the exhibition.

An Enormous Engine.

The announcement is made that the great engine that will drive the principal machinery at the World's Fair will be built in Milwaukee at the works of the E. P. Allis Company. The engine will be furnished as a part of the Allis Company's exhibit upon a special contract—providing that it shall be the chief instrument of motive power at the fair, and that no other engine of equal size shall be exhibited. It will be an engine of the quadruple expansion type, and of between 3000 and 4000 horse-power. Charles Allis says that his company will also exhibit several smaller engines and a complete saw mill equipment in operation. All told, the Allis exhibit will represent an outlay of $150,000 to $175,000, or two or three times the amount of the entire State appropriation.

Compared with this giant engine, which will represent Milwaukee industry at the fair, the Corliss engine shown at the Centennial Exhibition was rather a small concern. It was built by George H. Corliss of Providence, R. I., and was considered one of the wonders of the exhibition. It was a double-acting, vertical engine, with cylinders 44 inches in diameter and a stroke of 10 feet. Mr. Corliss rated his engine at 1400 horse power; consequently the Milwaukee engine will exceed it in power by more than 100 per cent. In 1876 no one would have thought of going to a shop west of the Alleghenies for so large a machine, and people who see Milwaukee's mechanical contribution to the Columbian Exposition will be impressed with the advance of manufacturing in the West.

Exhibits from Sheffield and Bristol.

Robert S. McCormick, the official representative in London of the Columbian Exposition, writes to Chief Fearn that the Society of Cutlers at Sheffield will interest itself in an exhibit The owners of the Trinity works, Sheffield, one of the largest manufacturing concerns in the trade, will send a special agent to Chicago to make arrangements for an exhibit from their house, and this may lead to a representative exhibit from the English cutlery trade.

Chief Fearn has also received, through agent McCormick, a letter from Lorin A. Lathrop, United States Consul at Bristol, who says that an enthusiastic meeting was held by the Bristol committee for the Columbian Exhibition April 28. This meeting resulted in an organization, arrangement of committees and similar preliminary work in the direction of promoting a specially interesting exhibit. The special committee appointed for the Bristol exhibit is an exceedingly influential one. It includes the Mayor of Bristol, the president of the Merchant Venturers' Company, the president of the Chamber of Commerce and Rev. William Bazely of the Bristol and Gloster Archæological Society, Sir John Maclean, Sir George Edwards, several members of the city council and a number of merchants and private men of wealth and social positon.

In the Marine Exhibit.

Lieutenant Baker is being deluged with applications for space in the main section of the Transportation Department exhibits, and that corner of the big building is going to be full of interest. Among reversible lifeboats one model will show the method of interior ventilation during a gale of wind. Then there will be one showing how the boat can be dropped into the sea in the darkest night from a sinking ship with all hands on board. From valuable sketches representations will be made of the lifeboat under many different conditions as she is riding out a gale at sea, and after the gale with its sail set.

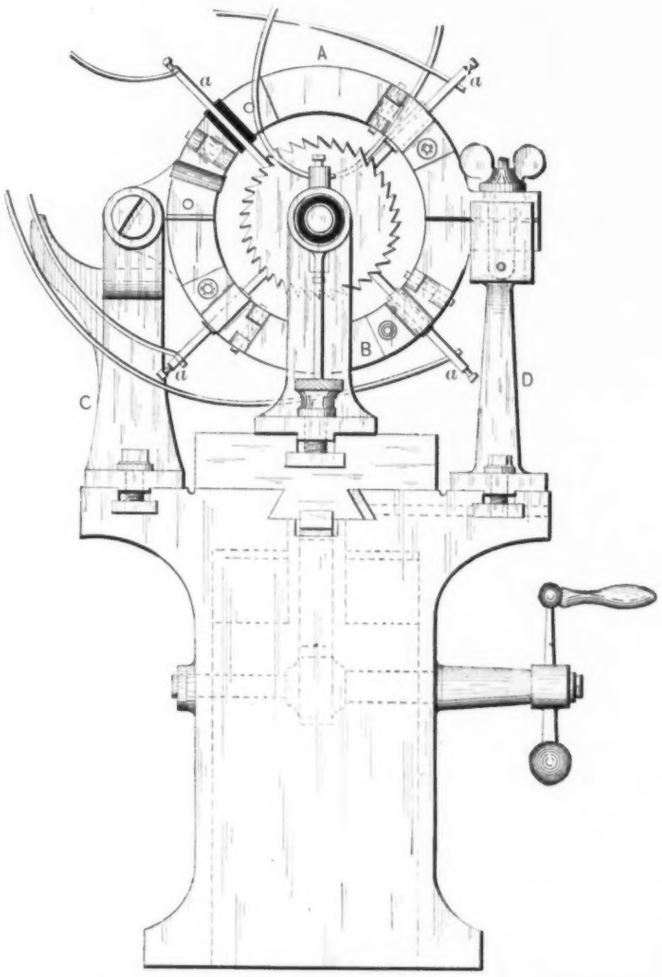


Fig. 5.—End Elevation of Electrical Heating Apparatus.

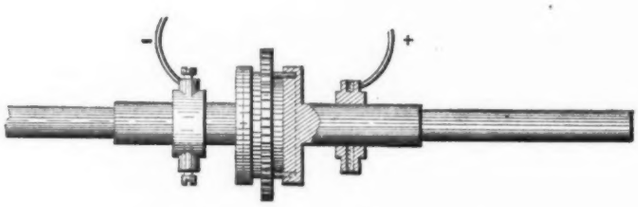


Fig. 6.—Side Elevation of Electrodes.

ELECTRICAL FORGING AND TEMPERING.

To illustrate a marine brake for instantly stopping vessels when under full headway a water space or route in the lake basin is asked, the steam yacht used to carry passengers charging a small fee for transportation. The exhibit of facilities by the Inman line of Transatlantic steamers, and of models of the Inman line, illustrating the progress gained in speed of steamships in the past 50 years, also that of the White Star line in its pavilion fronting the lagoon, comprising large sized models of steam ships, exteriors and interiors, have already been made the subject of extensive newspaper comment.

Interes ing varieties in modern naval invention and construction will include marine blowers for ventilating and forced draft, naphtha launches, electric gas engine launches, skiffs, shells or racing gigs, sail and paddle canoes, canvas-lined rowboats, combination row and sail boats, single-scull shells with rowing appliances complete, weighing in all about 25 pounds, centers 17 inches wide, tapering to nothing at both ends, 9 inches deep; models of package freight steamships for lake servi ee, marine engines, boilers and appliances; full sized canoes and paddles and sail and row boats with their trimmings. One striking and novel feature will be the building of boats by hand power on floor space allotted for that purpose.

This summary does not comprehend the historical and geographical features of the marine exhibit, which will forcibly il ustrate the development of naval architecture from the crudest primal forms down to the preseot time and show the characteristic methods of construction by all races and peoples throughout the world.

The Baltimore and Ohio Exhibit.

The Baltimore and Ohio Railroad is having an elaborate display made. It will include models of the rolling stock and motive power, showing the construction of the first 14 miles, which were opened for traffic May 24, 1827, from Baltimore to Ellicott Mills, when strap iron was nailed to wooden stringers, and the two or three open coaches, which were called wagons, were hauled by horses. The next step will show the York, the first locomotive constructed, which was built by Phineas Davis, and was purchased by the company for $4000, the price agreed upon before it was built. The "wagons" or coaches the York pulled, and which the horses pulled before it was constructed, will also be represented by models on the strap iron track just as they were when they made their first trip. The next representation will be models of the improvement on the York, being what is known as the "Grasshopper" or "Crab" locomotive, and were received by the road from the same maker. The first regular passenger coaches, or models of them, will also be exhibited.

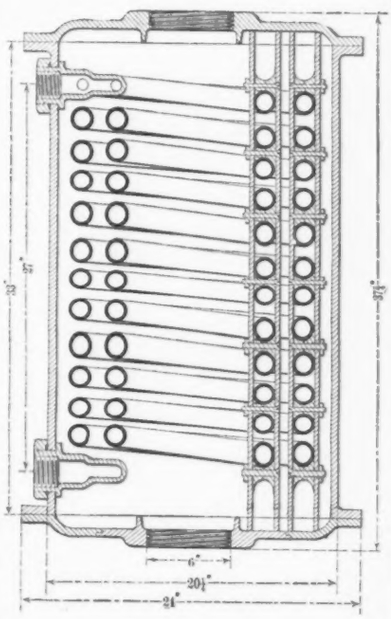
Making Angels for the Fair.

A facetious reporter for a Chicago paper makes the following "art" note: "Down at Jackson Park the sculptors are busy, even though the wind and rain drives the climbers off the big steel roof arches and the gardeners from the wooded island. The glass roof of the Horticultural Building just now incloses three studios. Unpoetic as is the truth, the main factors in the creation of a beautiful plaster goddess or dimpled cherub are a common kitchen dishpan and an every-day woodshed hatchet. The plaster is mixed in the dishpan and the symmetrical limbs of the goddess and the wrinkles of the cherub are chopped out with the hatchet. The making of a 16-foot angel, who will look as graceful and lisse and airy as a 100 pound girl, is about as poetic a task as the mining of a ton of coal. Her form is first built upon a high platform. Her beautiful rounded legs are made of 2 x 4 scantlings. Her spinal column is a wrought-iron rod. Her bosom and head are made of broken pieces of lath, and her wings are steel net ting. Then the dishpan comes in. The plaster and hemp fiber are mixed up and slapped on to the scantling legs and lath bosom, and when an unsightly mass has been built up a black-whiskered Italian with a pipe in his mouth and a pint bottle of beer in his blouse pocket takes up the hatchet and the angel begins to appear on earth."

Design for New Jersey's Building.

The New Jersey commissioners of the World's Fair, who met at Trenton on the 17th inst., chose, out of a great batch of designs for the New Jersey State building at Chicago, that submitted by Architect Charles Allen Gifford of Newark. His plan is for a reproduction of the famous Washington headquarters at Morristown. This is a mansion in the colonial style of architecture, with roomy apartments, and surrounded by a spacious veranda. The commissioners may cause a few alterations in the plan of the structure, but Secretary Lennox says that money will not be spared for its beautification. The erection of the building will begin next month.

Plan.



Vertical Section.

The American Feed-Water Heater.

Items of Interest.

The Pennsylvania State Board wishes to erect in the Woman's Building a beautiful booth of plate glass and burnished steel, wherein women will exhibit the process of making bolts, locks, hinges and many other small, delicate articles of the steel industry.

Mrs. Coleman, lady manager for Colorado, writes that she has learned that more than a dozen women are engaged in platting mines and mining districts. The Surveyor-General has promis d a fine exhibition in his line of women's work.

A $50,000 monument to Columbus, designed by sculptor Howard Kretschmar of Chicago, will be erected in Lake Front Park, which has been termed the "Gateway to the Exposition." It will be a statue in bronze 20 feet high, surmounting a granite pedestal 30 feet high. The monument will form the design for souvenirs of the exposition.

An association has been formed in Germany to organize excursion parties to visit the World's Fair and incidentally Niagara Falls and a number of the larger cities. It is proposed to accomplish this within a period of 60 days and an expense of between $250 and $300.

According to the Liverpool *Journal of Commerce* the English railways will carry World's Fair exhibits at half rates from any station to the port of embarkation, and most of the Atlantic steamship lines will transport them at a uniform rate of 11 shillings ($2.67) per ton.

Liberia, the negro republic, has accepted the invitation to participate in the exposition. Forty-five nations and 31 colonies and provinces have now accepted, and the aggregate of their appropriations, with 30 yet to hear from, is $4,646,895.

The general tint of the World's Fair buildings will be pale ivory. Several of them, however, will show modifications of that color.

The American Feed-Water Heater.

This heater, as may be seen by reference to the drawings, is of the coil type, and for which the makers claim superiority in the methods of construction and the material used. The coils are made of pure copper, a metal well adapted to this purpose, since it is capable of withstanding heavy pressures and of resisting the action of the impurities formed in the water. The feed water does not come in contact with any other metal in its passage through the heater. The exhaust steam goes directly into the shell, which is several times larger than the exhaust pipe, consequently it is impossible to cause any back pressure on the engine, and, on the other hand, it acts as a partial condenser. The construction of this heater is such that there are no joints inside of the shell exposed to boiler pressure, and ample room is provided for expansion. Consequently the liability to leak is wholly obviated. The purifying heater is adapted to sections where the water contains impurities that will deposit at a temperature that may be reached by the use of exhaust steam, and is constructed in such a manner as to be very accessible and readily cleaned. The heater can be set at any reasonable distance from the exhaust pipe, as the steam necessary to heat the water is drawn into it by induction. All soft deposits or mud can be readily blown off, as the interior is of such shape as to allow this to be effectually accomplished. When it is considered necessary to inspect the interior, the steam supply can be shut off by the valves, and by removing the top head free access is obtained. The coil can be removed if necessary without breaking a joint outside of the heater. These heaters are manufactured by the Whitlock Coil Pipe Company of Elmwood, Conn.

Spain having raised the embargo against American pork, this important article in our export trade is now freely admitted to all countries in the world.

Making Projectiles for the Government.

[*With Inset Page of Engravings.*]

On the Brooklyn shore of New York Bay, about half way between Governor's Island and Fort Hamilton, is an unpretentious building within which some remarkable work is now being carried forward in making shells and shrapnels for the Government. In the operation here pursued steel is handled apparently with as much ease as putty would be, and yet with an accuracy and closeness to gauge that is certainly very remarkable. The company doing this work is known as the United States Projectile Company, at whose head is E. W. Bliss of the E. W. Bliss Company, Limited, of Brooklyn. This company designed and built all the machinery in the works, and now have from the Government a contract to supply 18,000 projectiles, 4, 5 and 6 inches outside diameter, the price of which ranges from $2.50 to $12 each, according to size and whether the projectile is a shell or shrapnel. Through the courtesy of A. T. Porter, the superintendent, a representative of *The Iron Age* recently had an opportunity of inspecting the machinery and of following the billet through the various operations until it finally emerged as a completed shell.

The Plant in General.

The works may be said to consist of a machine shop equipped with the usual machine tools; pumping plant for supplying the pressure needed by the presses; and the press department, in which are the heating furnaces and presses for performing the first operations. It is to the latter department that our description will be mainly confined, as it is here that work of the most unique character is performed. Along one end of this department is a large gas furnace, built by Wm. Swindell & Bros. of Pittsburgh. Gas for this furnace is made by the company on the premises from coal. The other machinery consists of two hydraulic presses of small size, as shown in Fig. 1, and two double presses of larger size, as shown in Fig. 2. At the end of the room opposite that in which the heating furnaces are placed is located an accumulator intended for a pressure of 2500 pounds to the square inch, and alongside of which are high pressure pumps for supplying the water, and also a low pressure pump, the use of which will be explained further on.

Making the Projectile.

The billets for the projectiles are slightly larger in diameter than the finished size, and as a first operation the blank, Fig. 3, if we may use the term, is heated in the furnace, then put in the smaller press, which slightly flattens it and brings it into a very blunt shaped cone, as shown in Fig. 4. Next the blank is placed under a cupping punch, which forms a shallow recess in the top, as shown. In the next steps the blank passes through rings, being forced by the plunger of one of the larger presses. It has now reached a cylindrical form, as shown in Figs. 7 to 11. It now passes consecutively through different sizes of rings, each being a trifle smaller than the one preceding it, in order to bring it down to the proper diameter. Having been sent through the final straightening sleeve, it resembles (Fig. 10) very closely an ordinary cartridge shell and is finished, if it is intended to form a shrapnel, but if it is intended to form a shell the open end or nose must be closed in, as in Fig. 11. In order to do this, this end is heated for a distance of about 5 inches. The base of the shell is then put in water, in order to cool it up to this end, and then the shell is placed with the open end up in the small machine and the conical die brought down on the top, which closes the end, making it into a rounded cone with a small opening in the center. From this the shell is taken to a drop hammer and inverted and placed in a conical die, from the center of which projects a punch fitting within the opening in the apex. One or two blows of the hammer brings the conical end into perfect shape and insures accuracy in the size of the hole.

The size of the 5-inch forged steel shell is as follows:

Length	16.85	± 0.15
Diameter of body outside	4.97	± 0.01
Thickness of walls	6.35	± 0.03
Thickness of the base	1.	± 0.05
Outside radius at point	9.94	
Inside radius at point	6.94	
Hole in the point	1.4	

Taper begins 4.85 inches back from the end.

It will be seen from the limit of variations here allowed that the work is of an unusually accurate character, and that in order to comply with the requirements the utmost care must be exercised, especially in the final operations.

It is necessary in order to make the shell to heat the billet three times, two being for passing through the reducing rings and final straightening sleeve, and the third being for closing in the open end. We are informed that if the machinery were duplicated it would be possible to make the shrapnel at one heat and the shell at two heats, thereby greatly increasing the rapidity of the work and deriving great benefit as far as cost is concerned.

An important item in the cost of the plant is the making of the rings through which the shell is forced by the presses. It will be understood that except the final ring, these rings, after they have become worn to a certain extent, may be enlarged by grinding, in order to take the place of the ring next size larger, and for this reason their life can be extended until they reach the final limit of the ring through which the shell first passes. Some of these rings have had over 4000 shells passed through them, and are still in serviceable condition. It is not so with the straightening sleeve through which the shell passes as a final operation, and by which it is not only brought to gauge, but is also straightened and made into a perfect cylinder. For the 5-inch shell this finishing sleeve is 10 inches long and has sides which are absolutely parallel. These sleeves and rings, and also the punches operated by the rams, are of cast iron of special composition, and we may state, in order to show that the desired quality has been attained, that the sleeves will average 200 to 400 shells before hav-

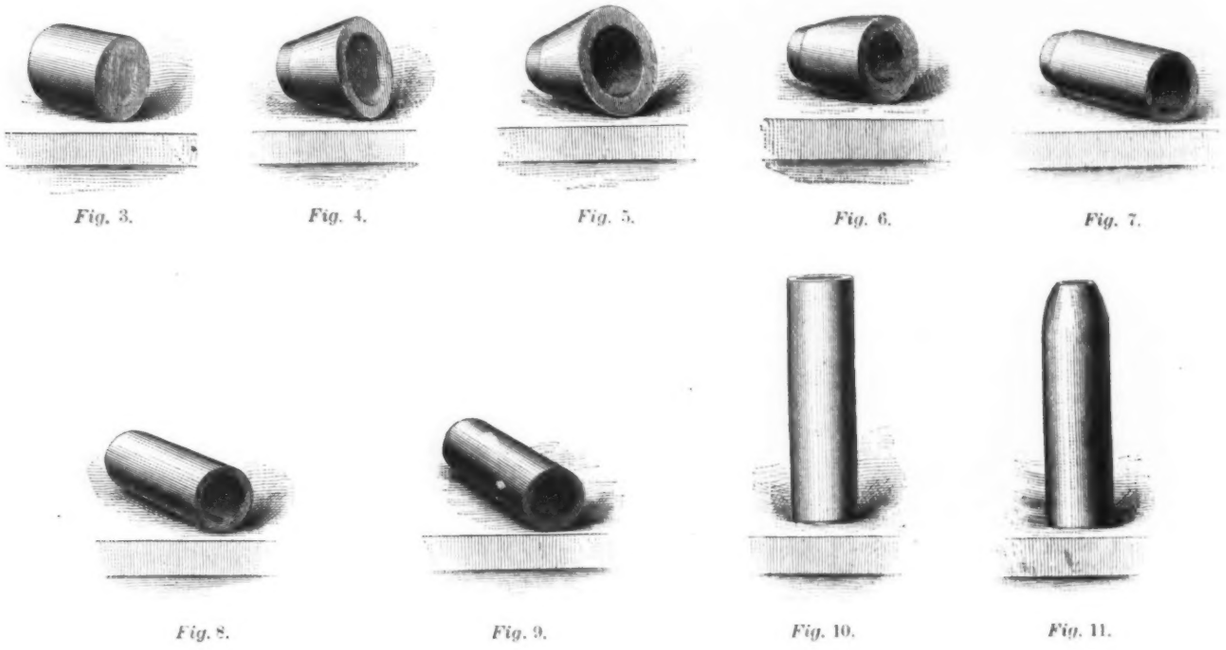


Fig. 3. *Fig. 4.* *Fig. 5.* *Fig. 6.* *Fig. 7.*

Fig. 8. *Fig. 9.* *Fig. 10.* *Fig. 11.*

The Several Steps in Making a Shell.

MAKING PROJECTILES FOR THE GOVERNMENT.

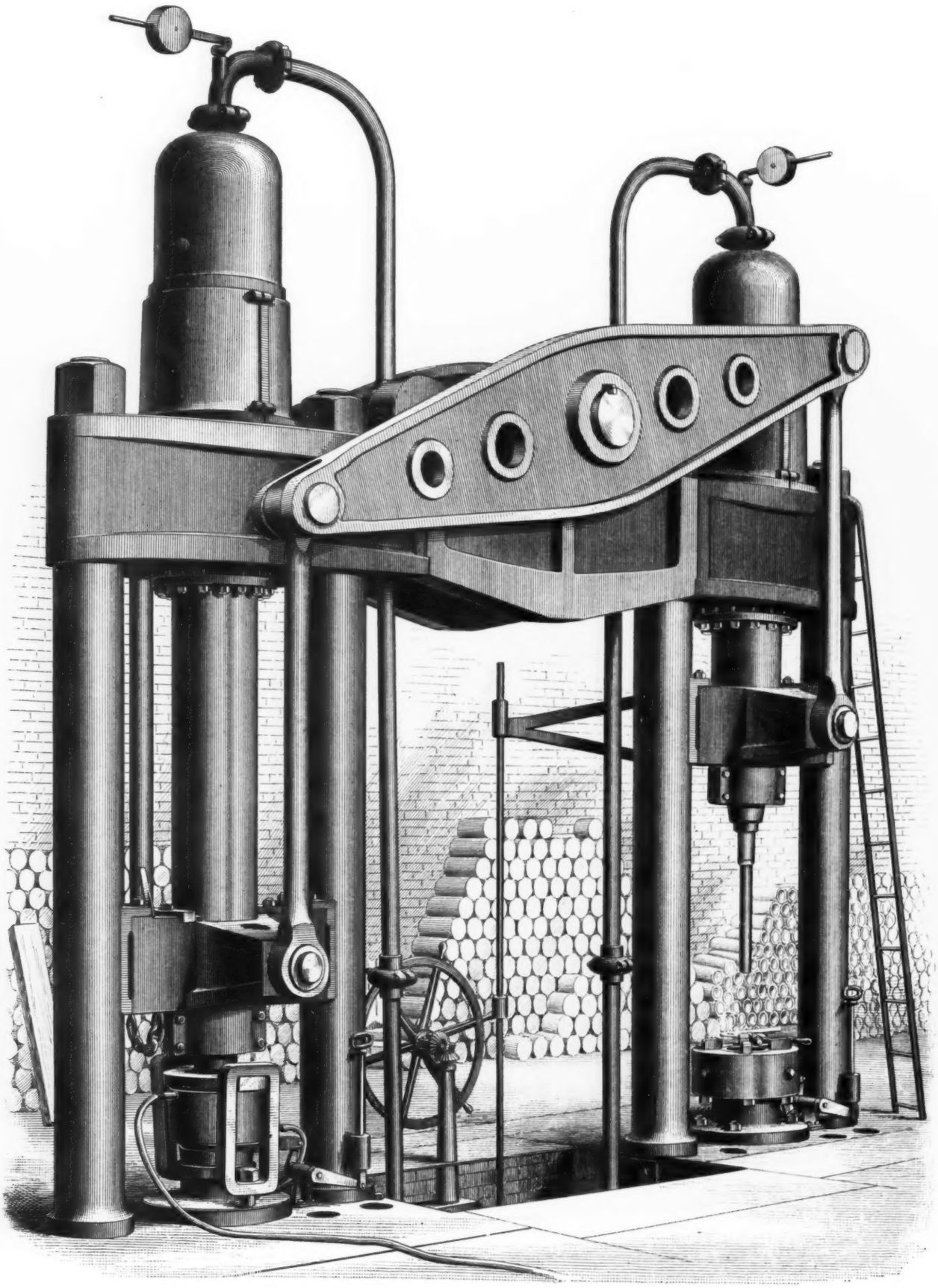


FIG. 2.—FIVE HUNDRED THOUSAND POUND HYDRAULIC PRESS.

MAKING PROJECTILES F

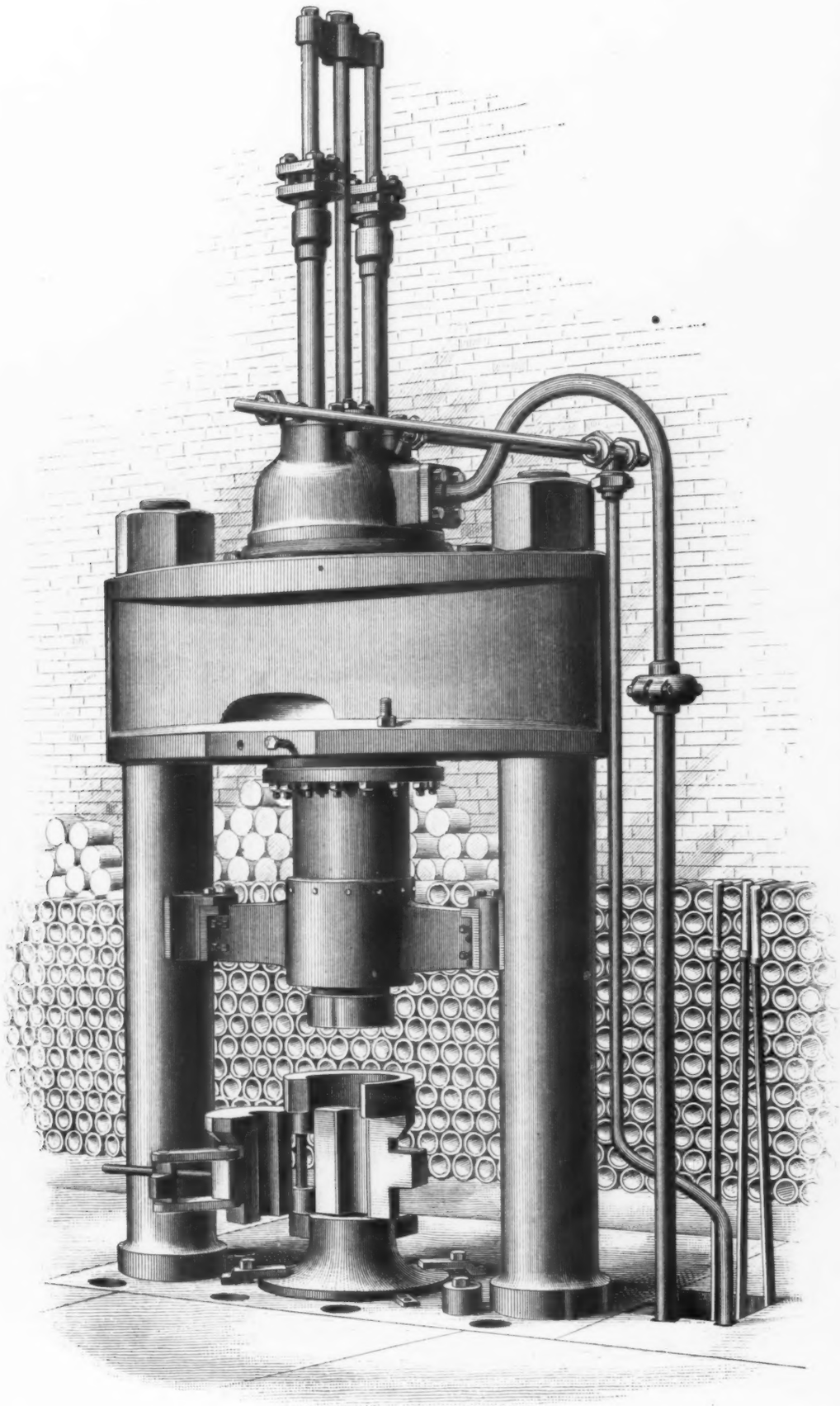


FIG. 1.—FOUR HUNDRED THOUSAND POUND HYDRAULIC PRESS.

TOR THE GOVERNMENT.

ing been worn so as to pass beyond the limits set by the requirements.

The heating furnace resembles the ordinary gas furnaces in general use; but a decided improvement has been made by the superintendent for heating the points of the shells preparatory to forming the rounded part. Fitting in the opening in the furnace door is a water back, through which are formed openings, adapted to receive the shell to be heated. Cold water is circulated through these, the result being that the shell is only heated on the end projecting into the furnace, the rest of the shell being kept comparatively cool. This has been found to be of great advantage, and has served to greatly facilitate the final operation.

Gauging and Testing the Shell.

The steel of which the shells are made is furnished by the Troy Steel and Iron Company of Troy, N. Y. According to the requirements laid down by the Government, it must have a tensile strength of 70,000 pounds to the inch, but so far most of it has run to 100,000 pounds to the inch and over. The composition of the steel the company do not care to make known, but its character may be judged from the fact that it will stand the unusually rough handling it here receives without showing in the slightest degree any flaw or blemish.

As given by the table above, the shells are tested and are not allowed in the more important measurements to vary more than $\frac{1}{100}$ inch. The Government furnishes two rings for each size of shell, which vary in diameter $\frac{3}{100}$ inch. The shell must pass freely through the larger ring, but must not pass through the smaller one. In addition calipers are provided in which the same allowance is made. An essential item is to ascertain whether the shell has been perfectly straightened by the last pass through the straightening sleeve, and in order to find this out it must pass through a perfect cylinder, resembling in every aspect, except that it is not so long, the bore of the gun in which the shell is intended to be used. This bore being perfectly cylindrical, it is apparent that any deviation in the shell from a straight line would quickly become manifest.

Before the rings are closed in the shell is inspected by representatives of the Government in order to ascertain if the thickness at the base is according to requirements and if the thickness of the shell does not vary beyond the limit set, and also that the outside and inside surfaces are concentric; or, in other words, that there is no variation in the thickness of the shell one part with another. Mr. Porter has designed some very neat apparatus for gauging the length of the finished shell and for quickly measuring all the separate parts.

This ends the work as far as performed by the Projectile Company. The shells are then delivered to the Government, the hole in the nose tapped out, the shell loaded and a plug with a detonating cap put in the end, this being the finishing operation.

The Small Presses.

We have in the foregoing endeavored to describe the shell as it passes through various stages toward perfection. It now becomes necessary to describe the machinery by means of which all this is accomplished. The small presses, one of which is shown in Fig. 1, and which we call small merely to distinguish it from the other, shown in Fig. 2, is in reality a machine of vast power and large proportions. It consists of two steel columns united at the top by a crosshead carrying the hydraulic cylinder, the plunger of which is 14 inches in diameter and has a stroke of 14 inches. Two of these presses are employed, the shell passing through one to the other as it is being brought to cylindrical form after having been first upset into the cone shape above mentioned. A pressure of 2500 pounds to the inch gives on this plunger a total pressure of nearly 400,000 pounds, forcing the ram into the work.

The Larger Machine.

This machine, shown in Fig. 2, consists of two pairs of steel columns united at the top by a common crosshead of cast iron, in the center of which are bearings for the shaft carrying two walking beams. This shaft is 9 inches in diameter. From each end of each walking beam extends a forged steel connecting rod, the lower end of which is attached to a crosshead fixed to the lower end of the plunger. The distance between the centers of the plungers is 12 feet. On top of the upper crosshead and placed centrally between each pair of supporting columns is a hydraulic cylinder carrying a plunger 16 inches in diameter and having a stroke of 5 feet, the total pressure on each of these plungers being a little over 500,000 pounds. It will be seen from this that as one plunger comes down and forces the shell under it through the ring the other plunger rises. In arranging the machine in this way there was one object aimed at besides the balancing of heavy parts. Suppose that one of the plungers has been forced down in order to carry the shell through the ring, the stripping plate is inserted and then the water directed to the top of the opposite plunger, which at this instant is at its extreme hight, and as it comes down, but before it has begun to force the shell through the ring, it has elevated the other plunger sufficiently to strip the shell from the punch. The total weight of this machine is 60 tons. The plungers are packed by hemp packing about 8 or 9 inches thick and set up by screws. This has been found to give great satisfaction, and leakage has been reduced to a minimum.

The Valves.

At the present time the presses are operated by what we might call four-way valves. Those in the small presses are worked by levers and in the larger one by means of the hand wheel shown in the center of Fig. 2. The valves are so arranged that water is admitted to opposite ends of the plungers, from the other ends of which it escapes at the same time. Of course to reverse the machine the valves are worked in the opposite direction. A change of great importance is now being made in these valves, by means of which it will be possible to work the machine idle under a lighter pressure of water, say 100 or 125 pounds to the square inch. This became necessary in order to bring the plunger down to the work or to that point at which it begins to force the shell through the ring without using water under a pressure of 2500 pounds to the inch. These valves, which have been placed on the machines, permit the low pressure pump referred to in the first part of this article handling the machine when it is not doing any work. The saving derived from this is expected to be, with the present plant, at least equal to 2 tons of coal a day.

Quality of the Work.

As perhaps the best illustration we can give of the quality of the metal used in the fabrication of the shell and of the care exercised in manipulating it, we may say that the company do not expect to lose over 2½ per cent. of the shells produced, and yet the requirements for this class of work are exceedingly rigid. It is expected to enlarge the capacity in order to carry the shell through at one heat, with the exception of closing the nose, and a further saving will be thereby derived. At first great trouble was found in making the rings of the right metal, and a clear conception may be formed of what has been accomplished so far in the passing of 400 to 500 shells through the final straightening sleeve, when we mention that in England they are satisfied if they get from 75 to 100 shells through the ring before the latter has been enlarged beyond the limits set.

Further Applications.

In addition to the making of shells and shrapnels, these presses are now engaged in stamping up the heads of the Whitehead torpedoes now being built for the Government by the E. W. Bliss Company, Limited, of Brooklyn. These shells are stamped from sheets ¾ inch thick into a shallow, dish-like form, and the pressure required is something unusual, even in hydraulic work. The presses are further applicable to the flanging and stamping of metals, where vast power is needed, and it is expected that they will be used more or less largely for this work in addition to what they were originally designed for—the making of shells.

Westinghouse Electric and Mfg. Company.

The annual meeting of the stockholders of the Westinghouse Electric and Mfg. Company was held in Pittsburgh last week. The annual report of George Westinghouse, Jr., president of the company, was presented and is as follows:

Under the plan of reorganization, the company has acquired (in addition to the shares previously held) all but 634 shares of the capital stock of the Consolidated Electric Light Company, paying therefor 75 per cent. of their par value in shares of the company at par, one-third in preferred stock and the balance in assented stock, thereby substantially relieving itself of the burden of fixed charges, amounting to some $250,000, incident to the leases of those companies. The following figures show the indebtedness of the company on January 1, 1891, and March 31, 1892, and the reductions made between those dates in the indebtedness of the company and its leased companies:

Bills payable January 1, 1891, $3,076,021.11; March 31, 1892, $461,962.17. Reduction, $2,614,058.94.

Accounts payable January 1, 1891, $622,469.51; March 31, 1892, $266,973.19. Reduction, $455,416.32.

Sundry liabilities, January 1, 1891, $344,179.54; March 31, 1892, none. Reduction, $344,179.54.

U. S. E. L Company bonds, January 1, 1891, $750,000; March 31, 1892, $650,000. Reduction, $100,000.

Sawyer-Man E. Company mortgage, January 1, 1891, $210,000; March 31, 1892, $210,000.

Scrip dividend, January 1, 1891, $195,962; March 31, 1892, $194,362. Reduction, $1600.

Total, January 1, 1892, $5,293,632.16; total, March 31, 1892, $1,783,297.36. Total reduction, $3,515,334.80.

Interest paid January 1, 1891, to March 31, 1892, $135,356.64. Total amount paid, $3,650,691.54.

By receipts sale of preferred stock applied to above, $2,875,000; from earnings and collections, $775,691.44; total, $3,650,691.44.

Notwithstanding the serious disadvantages necessarily incident to the reorganization, the company succeeded during this period in keeping its factories in operation and conducting a large business. It has thus been able to maintain its position as a competitor for the electric light and power business of the country, as is shown by the fact that from January 1, 1891, to March 1, 1892, its sales, in-

cluding those of its leased companies, aggregated $3,468,900.50. The impetus given to the business by the reorganization is shown by the fact that the orders taken by the company during the two months of March and April of this year aggregate $1,576,235.83, and the prospects for a large business were never better than now. Previous to 1891 the company's sales were mainly confined to apparatus for incandescent electric lighting by means of the alternating current transformer system. During the latter part of 1890 the manufacture of electric power and street railway apparatus was begun, and during 1891 a large amount of such apparatus was manufactured and sold, all of which has shown satisfactory results in daily use, and has earned such a reputation for design, superior workmanship and efficiency that we are justified in expecting that this branch of our business will assume still larger proportions in the future.

The cash on hand, accounts and bills receivable, manufactured product and material partly manufactured and in the storeroom of your company and its leased companies, and other items available as working capital, aggregated on March 31, 1892, $3,322,280.19. In addition to this, the company has in its treasury 7355 shares of preferred stock, 19,242 shares of assenting stock, and $332,751 97 of first mortgage bonds of local light and power companies, upon all of which the company expects to realize as may be required from time to time by the needs of the business. The company is also the owner of a large amount of stocks of local electric light and power companies, which are constantly appreciating in value. According to the reports of the various companies, the aggregate value of all the electrical machinery and apparatus turned out during the year 1891 did not exceed $25,000,000. The capacity of our factories, by a slight additional outlay, can be increased so as to manufacture fully 40 per cent. of all the electrical light and power apparatus required by the trade.

The balance sheet, March 31, 1892, follows.

ASSETS.

Cash in banks	$88,145 24
Bills receivable	224,238.72
Accounts receivable	1,247,427.50
Material in stock at cost of labor and material	509,543.82
Advances to leased companies	1,045,057.81
Stocks and bonds	4,003,163.09
Real estate and buildings	415,082.77
Machinery and tools	459,968.86
Miscellaneous	63.424.75
Charters, franchises, patents, &c.	4,346.717.19
Total	$12,402,769.75

LIABILITIES.

Accounts payable		$253,956 38
Bills payable		455,482.17
Sundries, contracts, and contingent liabilities:		
Scrip dividend due September, 1890		194,362.00
Stock subscription		35,075.00
U. S. E. Ltg Co. 6 per cent. 15 year bonds, 50,000 payable annually		650,000.00
Capital stock liabilities:		
Preferred stock, 72,384 shares	$3,619,253.00	
Assenting stock, 100,758 shares	5,027,916.00	
Common stock, 5,526 shares	276,300.00	
In treasury, 21,332 shares		
		8,933,469.00
Surplus		1,880,445.20
Total		$12,402,769.75

The election for directors resulted as follows: Charles Francis Adams, Lemuel Bannister, August Belmont, A. M. Byers, N. W. Bumstead, Marcellus Hartley, George W. Hebard, Henry B. Hyde, Brayton Ives, George Westinghouse, Jr.

By the terms of the new reciprocal treaty with Guatemala, the articles named in the following schedule are admitted free of duty: Iron for houses, wire for fences, railings of cast or wrought iron, anchors and hoisting tackle, iron balconies, metal window blinds, iron fire places or stoves, machinery for agriculture and mining.

THE WEEK.

Since the opening of lake navigation the water route eastward from Chicago has constantly gained on the all-rail routes, taking the larger share of the tonnage. Both routes, however, are said to be doing more business than a year ago, so that rates of freight are maintained. This being so lake shipbuilding is sure to receive a further impetus.

Austin Corbin regards the times as propitious for the revival of his scheme for the establishment of a line of steamships between Montauk Point, Long Island, and Milford Haven, in Wales, saving 300 miles of ocean travel, compared with the ordinary route. He proposes to avail himself of the law of May 10, 1892, applicable to the Inman steamships, and purchase a certain amount of foreign tonnage to be registered under the American flag on condition that steamers at least equal in tonnage and in size respectively shall first be either built or contracted for in American shipyards. The distance between the two ports is 2871 miles and Milford Haven need not be more than an hour longer than the present route from Liverpool, saving the long detour between Queenstown and London.

Intimations come from England that the British Admiralty are entitled, under an agreement, to the privilege of either purchasing or chartering, within certain limits as to time, the steamships of the Inman line which the company desire shall receive an American register, and may interpose to prevent the intended transfer to the American flag.

For the census year ending May 31 last the total area of New England devoted to cereals was 580,297 acres, as compared with 746,128 at the tenth census

Engineer George B. Cornell's plans for a second bridge across the East River contemplate a structure resembling the existing bridge in its general features, excepting that it will have a larger capacity, as there will be four railway tracks instead of two. The length will be 1620 feet, and breadth 106 feet. Aside from 25 feet greater length and 20 feet greater breadth, the steel structure above the granite towers will be the only noticeable difference between the old bridge and the new one.

The introduction of the electric motor in farm work will, it is said, inaugurate a new era in Western agriculture. A bill has been introduced in the Kansas Legislature to provide for the establishment of an agricultural power experiment station by the Government, in which an effort will be made to determine the relative value of the different motors on the great grain-growing farms of the plains.

A conflagration in Oswego, N. Y., on Friday night, practically wiped out Oswego's milling and elevator interest. Only one elevator is left in the harbor, the Northwestern, owned by Gaylord, Downey & Co. A conservative estimate puts the loss on buildings and machinery at $350,000. To be added to this is the loss on grain and lumber, which will swell the total to about $450,000.

The total immigration to the United States for the ten months ending April 30 has been 453,958 for 1892, against 431,238 for 1891.

Speaking of the changed monetary condition of the world compared with former years, and the rapid recovery from occasional periods of depression that takes place in these later days, Henry Clews says: "International, commercial and financial relations have become adjusted to the lightning methods of communication; a situation, therefore, is more quickly ascertained and, consequently, more readily and easily dealt with. In short, the world has become one vast counting room, in which a general disorganization can be straightened out in as many weeks or months as it formerly required months or years. The significance of this change to the present situation is that the world has already gained a point of recovery from the great breakdown initiated by the Barings' suspension, which, under former conditions, would not have been reached until years later. We fail to keep pace in our judgments with the modern quicker pace of events, and, therefore, the degree of recovery already attained from the break-up of 1890–91 is very imperfectly appreciated."

At the Chinese Legation in Washington the opinion is expressed that diplomatic relations will not be soon interrupted by the Exclusion act, and that the Imperial Government will not make reprisals.

It is stated that a syndicate of New York, Philadelphia, Boston, Chicago and English capitalists has been formed to purchase the sanitary ware potteries of Trenton, N. J., nine in all, valued at $5,000,000.

The New York Aqueduct Commission will open bids June 15 for the construction of the proposed Courtlandt dam, which will cost probably $7,000,000.

The trustees of Boland Farm at Peekskill, finding that there is no longer a demand for boys skilled at farming, have sold out and invested their funds in a trade school on the Auchmuty plan, for which buildings are being erected in this city at Fifth avenue and Fifty-second street.

The president of one of our rubber companies charges that fine Para rubber now comes adulterated with glucose, to the serious detriment of manufactured goods.

The Cleveland builders of the new monitor, or modified "whaleback," which has just carried her first cargo, says that boats of this type cost 15 per cent. less than steamers of the ordinary type, and therefore can do a profitable business while others are barely paying expenses.

A bill passed by the New York Legislature providing that prison-made goods shall be branded as such was vetoed by the Governor.

The island of Mauritius, in the Indian Ocean, was swept by a hurricane April 29, which destroyed many lives and ruined half the crops, while numerous vessels were thrown on the reefs.

The North River Bridge bill was defeated by Congress, so that the Hudson River Bridge, otherwise known as Lindenthal's, and which forms part of the rapid transit scheme, is not expected to encounter further competition.

Although great destruction has attended the floods in the West, the cotton lands are supposed to have actually benefited by the sediment deposited; and in the grain regions, agricultural machinery will do much to make up for lost time. Furthermore, a drought later in the season is supposed to have been averted. Corn planting is very backward.

Terminal improvements in the interest of the Baltimore and Ohio Railroad are to be made at St. George, Staten Island. The expenditure contemplated is $300,000.

Railroad building is now at its minimum.

The annual spring rush for Europe has now reached its hight. Seven steamers sailed on Saturday, with all the passengers that could be accommodated. For the first time since the season fully opened, few applicants were left over for another week.

The Iron Age

New York, Thursday, May 26, 1892.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - HARDWARE EDITOR.
JOHN S. KING, - - - - BUSINESS MANAGER.

Registering Foreign Tonnage.

Encouraged by the success of the owners of the Inman line in obtaining an American registry for two of their best steamers, a similar application has been made to Congress, in behalf of the Pacific Mail Steamship Company, and by Austin Corbin and others. The essential condition named in each instance is that the company to obtain an American registry shall contract to build a vessel of at least equal tonnage in an American shipyard, and the vessel may be required at the pleasure of the Government to serve as a transport or cruiser. Coastwise trading is not included in the privileges granted. The obligation to build in America an amount of tonnage equal to that transferred from a foreign flag disarms all hostility to the measure, with rare exceptions. We notice that Capt. Nathaniel McKay, of shipbuilding celebrity, is not so easily appeased. He says: "These ships were built by cheap labor in England, where blacksmiths get $6.48 per week, while blacksmiths in America get $19.50 per week. A boiler maker in England gets $8.50 per week and a boiler maker in America gets $16.80 per week. A machinist receives $8.50 per week in England and in America $21. An angle iron worker in England receives $6.48 per week and in America $12. A plater in Glasgow receives $6.48 per week and in Philadelphia $12. Riveters in Glasgow receive $6.48 per week and in Philadelphia $13 per week and so on is the list of wages."

Captain McKay holds to one side of the argument, keeping in view the interests of American labor, possibly not giving due weight to the incidental advantages directly arising from the transfer of the particular ships named, which seem to have influenced Secretary Tracy. Doubtless it remains with the authorities at Washington to determine how far the principle of protection incorporated in the navigation laws shall be invaded—otherwise stated, what special plea or public exigency shall justify a new departure.

For a long period public sentiment has been practically a unit in opposition to the granting by the Federal Government of bounties, subsidies or anything of the kind in aid of steamship enterprise. Such action, it was argued, savored too much of special legislation. It would not do for the Government to enter into competition with private capital by espousing the cause of a single company or individual, even for so laudable an object as to uphold the flag upon the seas This noncommittal policy has been adhered to unswervingly for something like 30 years, the Government and individual American citizens alike holding aloof from Transatlantic steam navigation, leaving foreigners in undisputed possession of the field. Meanwhile the development of European capital in this line of enterprise has been stupendous. The latest exploits as regards speed of transit by such ships as the Teutonic, City of Paris and Fürst Bismark break all previous records. And yet, aspiring to higher achievements, the Cunard Company are known to have on the stocks at the present time two enormous steamships of proportionate power, with which they expect to surpass all rivals. It was under circumstances like these that Congress was influenced to take a radical departure. The Postal Subsidy act of itself was confessedly inadequate; but a beginning had been made, and events closely following emphasize the necessity for further action, at least so far as to fix some limitation to the admission of foreign tonnage. Our trade with Bermuda and the Windward Islands is already done for the most part by foreign-built steamers, owned wholly or in part by citizens of the United States; but it will be long before American shipowners consent to surrender the coasting trade to foreign bottoms navigated by foreign crews. At present it would appear that within a comparatively brief period some indication will be afforded of the measure of success that is attainable under the new policy.

The American and Foreign Iron Trades.

The annual statistical report just issued by the American Iron and Steel Association contains a vast amount of very interesting information. That part of it which is devoted to the presentation of domestic statistics is, of course, the most comprehensive. Last week we gave some of the figures, taken from an advance statement, showing how the production of leading articles in 1891 compared with the output of 1890. It is therefore unnecessary to repeat them. With the full report before us, the most striking fact observed is that at last the substitution of steel for iron has progressed so far that the attempt to preserve separate statistics of manufactured iron and steel has been abandoned. This had been foreseen for some time, but it was not known when it would become obligatory. In this respect the year 1891 marks a distinct epoch.

Turning to the details of iron and steel production in foreign countries, it is seen that the United States now maintains undisputed supremacy over all competitors. It is so far in the lead that there seems to be no danger that it will ever be overtaken by any country now engaged in the manufacture of iron and steel. The depression of 1891, which caused a falling off in our production, was not confined to this side of the Atlantic, but was felt also by the people of other nations. Owing to the laxity of some countries in the collection of statistics, full details are unfortunately wanting. The figures for Great Britain, Germany, France and Belgium have been obtained, however, and partial statistics for Austria-Hungary, Sweden and Spain are available, so that the data for comparison are fairly satisfactory. Outside of these countries, Russia is the only iron-producing nation of any importance, and its annual output of pig iron is only about 750,000 tons. The pig-iron statistics given for the several countries are as follows; all in metric tons, except for the United States and Great Britain, which are in gross tons:

	1891. Tons.	1890. Tons.
United States	8,279,870	9,202,703
Great Britain	7,228,496	7,904,214
Germany	4,524,816	4,637,239
France	1,919,185	1,962,196
Belgium	688,056	787,836
Austria-Hungary	.....	925,308
Sweden	.....	456,102
Spain	.....	243,366

From present appearances this year's output of pig iron in this country is not likely to fall below that of last year and may exceed it, while British production is being heavily cut down on account of the great coal miners' strike.

With regard to steel, the position of the United States is equally gratifying, our leadership being maintained despite the falling off in the production of last year. The figures given for all kinds of steel in unmanufactured form, in the same kinds of tons as noted above for pig iron, are as follows:

	1891. Tons.	1890. Tons.
United States	3,904,240	4,277,071
Great Britain	3,156,543	3,579,043
Germany	2,352,074	2,161,821
France	765,290	717,975
Belgium	243,729	221,296
Austria-Hungary	.....	499,600
Sweden	.....	169,286
Spain	.....	63,011

Crucible steel has not been included in the British figures, but the quantity was hardly over 100,000 tons for either year. Germany, France and Belgium, it will be observed, increased their output in 1891, in marked contrast with the course of trade in the United States and Great Britain.

Some weeks since we published a statement showing that the exports of iron and steel from the United States were then, for the first time in our history, in excess of the imports. The report of the Bureau of Statistics for the month ending March 31, and the nine months ending at the same date, is just at hand, and shows that this condition of affairs is continued. The value of the imports of iron and steel, excluding iron ore, was $34,802,652 in the nine months ending March 31, 1891, while for the corresponding period of the present fiscal year it has fallen to $19,649,288. The decrease for 1892, as compared with the average of the previous five years, was $13,808,378. Turning to the exports of iron and steel, not including ore, we find that in the nine months ending March 31, 1892, the aggregate value was $22,654,189, which is a gain of nearly $1,500,000 on the corresponding period of 1891, but $6,497,645 on the average of the five preceding years. The great falling off in imports was in tin plates, which for the present fiscal year show a decrease of $7,-

964,314 on the average of the previous five years. In the nine months ending March 31, 1891, the value of the imports of tin plates was $20,906,663, while in the corresponding period for the present fiscal year the imports only amounted to $7,306,010.

The Cost of Anthracite Pig Iron.

The improvement in blast-furnace methods is most forcibly illustrated by comparative figures which have been given us this week for a pig-iron establishment in the Lehigh Valley, Pa. On June 30, 1857, the year of the great panic, when the price of everything, including labor, was at a very low point, the cost of production of a ton of pig iron was as follows:

Cost of coal per ton of iron	$6 48¾
Cost of ore per ton of iron	8.46¼
Cost of limestone per ton of iron	.49¼
Salaries and wages of every kind per ton of iron	2.75½
Carting about furnaces, per ton of iron	.44
All other items—bricks, clay, horse-feed, &c.—per ton of iron	.90¾
Total, per ton of iron	$19.54½

The cost of materials for the past week per ton of pig iron made is as follows at two of the furnaces of this concern:

Fuel.	Limestone.	Ores.	Totals.
$3.33	$0.35	$5.78	$9.46
3.524	.376	6.965	10.865

The cost of labor and other incidentals to be added to these totals to get the cost of pig iron, excluding interest on capital, is about $1.65 per ton of pig iron. The total cost would thus be $11.11 and $12.515 respectively.

The furnaces which are here compared are the same furnaces in every respect at which the results were produced which are quoted in the figures for 1857. They are blown by the same power and have the same equipment in other respects. The remarkable change which has taken place in the reduction of cost is attributable to a better selection of ores and the management of the furnaces according to the latest scientific methods. The aid of chemistry in this respect has been of the highest benefit. The percentage of metallic iron in the ores now used averages 54, against 40 in 1857. The fuel used in every case is anthracite coal, which is now being received from the same mines from which the supply was drawn in 1857.

In the light of the present competition from the South, and in view of the declaration of some of the Southern pig-iron manufacturers that they expect to be able to sell their pig iron at prices even lower than those now being obtained, these figures are of very great interest. They show that well-managed Northern furnaces can hold their own in the struggle for existence.

The floods in Western rivers, caused by excessive rains, are disastrous beyond precedent. River towns were inundated in Nebraska, Iowa, Missouri and Illinois, causing losses of life, cutting off railway communication, washing away bridges and drowning cattle. In Sioux City alone the damage is estimated at $2,000,000. In Chicago business is seriously interrupted, and accounts received at that point are to the effect that the damage done in the Western States is equal to $50,000,000. It is too early to form any estimate of losses on the lower Mississippi, where the levees have given way in several instances.

A British Labor Investigation.

Investigations into the wages paid in various foreign countries have become quite numerous in late years. In this country the question has largely been a matter of politics, and has been liberally made use of by advocates of both sides of political issues. An immense literature has consequently developed on this subject. Such investigations, however, are not confined to the United States. The citizens of other countries are also profoundly interested in the subject. We have just received from J. S. Jeans, secretary of the British Iron Trade Association, a copy of a memorandum which he has drawn up on behalf of that association for the Royal Commission on Labor. This document gives a good deal of information on the labor question, which has been obtained from official sources in the leading manufacturing countries of the world The matter is discussed under several heads, which are embraced under the grand divisions of mining and iron and steel works labor. The information which is submitted covers wages, hours of labor, productiveness of labor, profits of employers, natural advantages, juvenile and female labor and liability to accidents.

The comparison of mining labor covers Great Britain, the United States, Germany, France and Belgium. The figures given show that the average annual earnings of all classes of labor employed about mines in the United States amount to £97. 5/, as compared with £52 in Great Britain, £43. 12/ in France, £38. 6/ in Germany and £34. 19/ in Belgium. The productiveness of labor in each country is shown by a comparison of the production of coal per miner for the year 1889, in which it appears that in the United States there was an output of 823 tons per man as against 425 tons in Germany, 387 tons in Great Britain, 305 tons in France and 246 tons in Belgium. The report states that the average for Pennsylvania bituminous coal is higher than that of any other country, and augurs the possession of great natural advantages as well as sustained labor. The statement is also made that in no country which produces iron and coal on a large scale do the profits over the whole reach an abnormally high figure, so far as the results are capable of ascertainment. In Great Britain there is sufficient evidence to show that mineral profits, taking one year after another, are very low, and do not admit of any appreciable margin, on an average of years, for the raising of wages, or the reduction of hours of labor, without a substantial increase of selling price, which would be likely to be detrimental in other directions. It is usual to hear it argued that England has superior advantages to any other country and can better afford to pay a higher rate of wages. This is certainly not true as far as coal is concerned. As regards iron ore, there can be no doubt that its average cost in Great Britain is low, but it is not so low as in Luxembourg and Lorraine. Tables are given to show that in the United Kingdom the proportions of female labor in iron and coal mining and in general iron works and steel works, blast furnaces, rolling mills, &c., are so small as to be hardly worth consideration, while the proportions of youthful labor are less than they were. The total number of both sexes employed in 1890 under the age of 16 was 8.2 per cent. of the whole, while the number of women and girls employed was only about 0.7 per cent. of the whole. In Belgium the total number of females employed in coal mining in 1889 was 12.3 per cent. of the whole, while 17 per cent. were under the age of 16. In France in 1888 about 7 per cent. of the whole were children under the age of 14, while over 3 per cent. were females. With regard to the United States, the report says female labor in and about the mines is practically unknown, but boys are employed to a considerable extent, especially about the surface of coal mines. The average number of boys employed under the age of 16 in 1889 was 4.3 per cent. underground and 20.5 per cent. above ground.

Under the head of "Iron and Steel Works Labor" statistics are given to show that Great Britain does not now occupy the commanding position as the center of the world's iron trade that she did 20 years ago. In the interval other nations, and especially the United States and Germany, have come more prominently to the front. Germany not only manufactures for her own requirements, but competes with Great Britain very keenly in other markets. The United States, however, are not as yet to any extent an iron-exporting country. The statement is made that iron workers' wages have not materially improved in Belgium during the last 30 years. With regard to the United States, it is stated that it is perhaps not quite fair to either country to compare English wages with those paid in the United States, where the conditions generally are so different, especially in reference to the cost of living and the intensity of the labor performed. Generally, as might be expected, wages take a considerably higher range in American works; so much so in some cases that their amount is almost incredibly high. But in such instances, it must not be forgotten that there is usually some special feature characteristic of the work to be done or the worker, and it is not unusual in both the United States and Great Britain for the highly-paid workman to pay for a certain amount of less skilled assistance out of his high wages. Figures are then given, taken from the report of the United States Labor Commission, showing the total cost of the production of pig iron, muck bar and steel rails, and the proportions thereof due to labor. The report says the cost of labor is stated to be generally double that of Great Britain, although, as is well known, the American blast furnaces and rolling mills are distinguished for their enormous capacity of output, which for a given plant will probably be 100 per cent. more than in Great Britain. As compared with Germany, the English steel workers receive 50 per cent. higher wages. The higher paid men at the Bessemer converters in Wales earn 30 to 42 shillings per week, while in Germany they do not much exceed one-half of this figure, the higher averaging about 20 shillings and others 18 shillings. With regard to the hours of labor, there has been much less change in the hours worked at blast furnaces and rolling mills in recent years than there has been in regard to mining labor. In the Cumberland district, however, instead of two shifts of 12 hours each, it has for some years been customary to have three shifts of eight hours each, so that the week's labor varies from 56 to 60 hours.

There are no general conclusions embodied in this report, which is confined to the presentation of statistics, from which conclusions may be deduced by those who take the trouble to study them. It would appear, however, that in comparison with the United States, the manufacturers of Great Britain occupy an advantage in much lower labor cost, while they are not so well situated as regards competition with Continental countries, in which the wages are on a lower scale than theirs. The report terminates with the statement

that the association would add that the iron and steel industries are subject more than most industries to the vicissitudes of good and bad times, and that, on an average of years, the profits made are by no means excessive. The general rule is for wages to move upward and downward in relation to the realized selling price of iron or steel, and no doubt the commission will learn from other sources that automatic sliding scales have had a beneficial influence in limiting the number and the area of trade disputes.

CORRESPONDENCE.

The New-Form Siemens Furnace.

10 Queen Anne's Gate,
Westminster, S. W.,
LONDON, 11th May, 1892.

To the Editor:

SIR: In your issue of the 21st ult. I notice an article on the "New-Form Siemens Furnace," based upon a paper published in *Stahl und Eisen*, by Dr. Müller.

Dr. Müller is disposed to criticise severely the New-Form Siemens furnace, but to that I cannot object. In fact such criticism, if made upon a fair basis, will be beneficial to manufacturers as well as myself, as the subject will thereby be well ventilated. I am pleased to notice that Dr. Müller's theoretical analyses of producer gases are favorable, and I should, indeed, be very glad if they could be realized in current practice.

In the calculations which you give no account is taken of the value, in the gas producer, of the heat imported into it by the large proportion of nitrogen associated with carbonic acid in the products of combustion. These products of combustion are introduced into the producer at a very high temperature, and their heat should be sufficient to effect the conversion of burnt gases in the presence of incandescent fuel.

In an ordinary gas producer, in working order, one-half the fixed carbon in the fuel is converted into carbonic dioxide in the first instance, by means of cold air, which carbonic dioxide in passing through the upper layer of incandescent fuel is converted into carbonic oxide by taking up an equivalent proportion of carbon. The production of carbonic dioxide in the producer is attended with a development of heat more than sufficient for the conversion of carbonic dioxide into carbonic oxide, inasmuch as the same heat, besides doing that work and distilling the hydrocarbons from coal, also converts some steam into hydrogen and carbonic oxide.

To avoid discussion on that point I will not attempt to fix the temperature of combustion in an ordinary gas producer in figures; but it will be admitted that the temperature attained is much below the temperature of combustion in regenerative gas furnaces generally. It may therefore be argued, as I argued in my paper read before the Iron and Steel Institute in Paris in 1889, to which you refer, that the products of combustion which, in the New-Form Siemens furnace, are taken at a point as near to the heating chamber as possible, are at a sufficient temperature to insure their reduction in a gas producer in the presence of incandescent fuel.

In open-hearth steel melting furnaces the temperature of the products of combustion, leaving the furnace, is much higher than the temperature required, in a gas producer for effecting the conversion of burnt gases (CO_2 and H_2O) into combustible gases; spare heat is therefore available for distilling hydro carbons from coal, and for converting into combustible gas the steam used for injecting the products of combustion into the producer. In other furnaces where the temperature of combustion is not so great, as in open-hearth steel melting furnaces, a small proportion of air may be introduced into the producer, along with the products of combustion, although it should be noted that the latter frequently contain a certain amount of free oxygen. In some cases, instead of steam jets, compressed air jets may be used for injecting the products of combustion into the producer, into which hot air may also be injected, if required. This has been foreseen, and the several patents to which you refer have mainly for their object to cover constructive details of the New-Form Siemens furnace, and the use of various means for injecting products of combustion, or air, into furnaces.

In proof of the efficiency of the New-Form Siemens furnace, it may be added that applications are being frequently made both at home and abroad, fresh applications at new works, and extensions at works where the New-Form Siemens furnace has already been in use for some time. So far the furnaces built have been mostly for puddling iron, welding iron and heating steel, and the results obtained show a saving of from 40 to 50 per cent. in fuel over the original form of the Siemens furnace, and a saving of from 60 to 70 per cent. over grate furnaces. These applications are for similar purposes to those of the first furnaces erected; but extensions are now being made in other directions, including the melting of steel on the open hearth, some of which furnaces have already been put into successful operation. I am, sir,

Your obedient servant,
per pon. Frederick Siemens,
JOHN HEAD,
F. G. S., M. Inst. C. E.

The Wire Gauge.

To the Editor: In the discussion of the proposed standard iron plate and wire gauge, your correspondents have neglected altogether a large and important interest that stands in need of a good gauge even more than the plate mills—viz., the electrical industry.

Electricians, of which there are thousands in the country, are calculating wire sizes daily, and the bane of their existence is the unscientific wire numbering now in use. Two gauges are employed, the Brown & Sharpe and the Birmingham. The current capacity of a wire is dependent upon its cross section; but as the cross section is proportional to the square of the diameter, it is usual to base all calculations on the circular mil—that is, the diameter of a wire (in thousandths) squared. To illustrate a few gauge numbers:

B. & S. Gauge.	Bir. Gauge.	Diameter.	Circular Mils.
10	..	0.1019	10,382
..	13	0.095	9,025
11	..	0.0907	8,234
..	14	0.083	6,889
12	..	0.0808	6,530
..	15	0.072	5,184
13	..	0.07196	5,178
..	16	0.065	4,225

What nonsense to express the thickness of a sheet of metal or of a wire with five places of decimals, not to mention eight places in the Amalgamated Association's proposed table! Then observe the varying differences between circular mils: No gradual increase by equal increments, but a skip here and a broad jump there, the eccentricities continuing right through the tables from 0000 to 36 and 40.

Oberlin Smith's suggestion is by far the most sensible from the electrical engineer's point of view. I am sure that your correspondent, who says he is very liberal in his views, will, in his enthusiasm for an American standard of measurement which shall be recognized as such "for all purposes," concede that his $\frac{1}{4}$ inch is too low a limit for electrical purposes and be willing to make it, say, $\frac{1}{2}$ inch. What with cheap and thoroughly reliable micrometer gauges, which are easily read, one would hardly insist on using sixty-fourths of an inch, when hundredths, or fiftieths, or twentieths, would be just as handy and have the advantage of being uniform with the smaller divisions of the scale based on thousandths of an inch.

Hoping that the matter will be looked at from all sides and that a simple and labor-saving (which means time saving) gauge will be eventually adopted by both iron and copper rolling-mill masters, I am, yours truly,

WALTER S. DIX.

NEW YORK, May 19, 1892.

OBITUARY.

WILLIAM VAN AUDEN.

William Van Auden died at his home, 967 Madison avenue, New York, on the 21st inst. Mr. Van Auden was the inventor of many labor-saving mechanical devices. His first patent covered a machine for making railroad bolts and spikes. In 1850 he invented a railroad chair, which was the precursor of the fish plates now in common use. He produced the first machine for making spiral springs and was seven years getting up a file-cutting machine. He invented mowing machines, locomotives, lubricators, trip hammers, sugar refiners and other machines. Mr. Van Auden was born near Poughkeepsie in 1815. He was married twice. His second wife and one son survive him.

DAVID E. BROWN.

David E. Brown, Buffalo, N. Y., whose funeral took place in that city on May 17, was taken sick in January and died after a protracted illness. He was born about 50 years ago in Harland, Niagara County, N. Y. He went to Buffalo about 40 years ago and attended schools there. In his early career he was employed by the New York Central, Boston and Albany and Illinois Central railroads in the traveling departments. He attracted the attention of P. P. Pratt, the great iron manufacturer of the day, who secured his services. For more than 20 years Mr. Brown was one of the prominent managers in the iron department of Pratt & Co. Mr. Brown was a member of the firm of Beals & Brown, successors to Pratt & Co. in the iron and hardware business, which has been very successfully carried on at the old stand on the Terrace. He was known as one of the most thoroughly posted iron men in this country, and was largely interested in charitable and religious institutions. The Eagle Street and Hampshire Street M. E. churches were started mainly by his efforts. He was superintendent of Grace and Hampshire Street Sunday schools. In 1873 he founded the Newsboy's Home, and many a dirty, ragged newsboy owes his start and success in life to his encouragement and advice.

JOHN R. BUCHTEL, a capitalist and philanthropist, died at his home in Akron, Ohio, on the 23d inst., of paralysis. He was the founder of Buchtel College, to which he gave $500,000. Mr. Buchtel was 72 years old.

The establishment of a new steamship line for the carrying of Florida oranges to Europe doubtless marks the beginning of a new era in the main industry of that State. The richness of the soil made the yield of that fruit something of a drug on the American markets, and this tendency was increased by the enterprise of California growers in putting their products in many markets at lower prices. The necessity for finding a market for surplus production is seen equally in the superabundance of natural as of manufactured products.

Wages Paid in Foundries from Maine to California.

The tabulated statement of wages paid in foundries of the United States, which is given below, has been compiled by the Foundrymen's Association of Philadelphia after a considerable amount of correspondence. Some of the figures are from country foundries, others from car wheel, stove and malleable iron and pipe shops, &c. The highest wages are paid on the Pacific Coast and the lowest wages in some of the Southern States, where colored labor is employed. The wages in New York City and Brooklyn are somewhat higher than paid in Philadelphia, Wilmington, Baltimore and Boston. In thickly populated districts, where large volumes of business are done, like Pittsburgh, Chicago and Cincinnati, the wages are rather higher than the average. In other districts, including portions of Lehigh and Schuylkill counties, Pa., where coal mining has been slack and where there is a large amount of unemployed labor, the wages are below the average. The prices paid are based upon a day of ten hours. It is understood that this table is not published by the association with the idea of taking any active interest in the putting up or depressing of wages, as the association has taken no steps toward that end.

Places.	Molders.			Core makers.			Cupola tenders.			Chippers.		
			Average.			Average.			Average.			Average.
Philadelphia, Pa.	$2.40	$3.25	$2.50	$1.75	$2.25	$2.00	$1.75	$2.25	$2 00	$1.50	$1.75	$1 50
Conshohocken, Pa.	....	....	2.83½	...	....	1.70	....	....	1.70	....	....	1.35
Norristown, Pa.	2.25	2.66⅔	....	...	....	1.50	....	....	1.66⅔	....	....	1.40
Phœnixville, Pa.	....	....	2.50	...	....	2.00	....	....	2.00	....	....	1.80
Pottstown, Pa.	....	....	2.00	....	....	2.30	....	....	2.10	....	....	1.20
Reading, Pa.	1.60	3.50	2.00	1.50	2.50	2.00	1.75	2.50	2.00	1.20	1.50	1 25
Harrisburg, Pa.	....	..	2.00	....	..	1.75	....	....	1.50	....	....	1.10
York, Pa.	....	....	2.10	....	....	1.75	....	....	1.75	....	....	....
Waynesboro, Pa.	1 70	2.30	2.00	1.10	1.60	1.35	1.10	1.25	1.17½	1.10	1.20	1.15
Allentown, Pa	1.80	2.10	1.90	1.80	2.10	1.90	....	....	1.80	....	....	....
Scranton, Pa.	2.25	2.50	...	....	..	1.90	....	....	1.50	...	....	1 25
Lebanon, Pa.	1.25	2.50	....	1.10	1.50	1.50	....	....	1.50	....	....	1.25
Berwick, Pa	....	....	2.40	....	....	1.50	....	....	1.75	....	....	1.10
Scottdale, Pa.	....	....	2.50	2.25	2.50	2.00	....	....	2.00	....	....	1.35
Corry, Titusville, Pa.	....	....	2.50	....	....	2.00	....	....	1.50	....	....	1.50
Chester, Pa.	2.25	2.70	2.40	1.66	2.00	1.75	1.66	2.25	2 00	1.25	1 40	1.35
Marietta, Pa	....	...	2.00	...	....	....	....	....	2.00	....	....	1.00
						Boy, 75						
Williamsport, Pa.	1.50	2.50	....	..	....	1.75	....	....	1.75	....	....	1.25
Wilkesbarre, Pa	2.25	2.60	....	....	....	2.25	....	....	1 70	....	....	1.80
Drifton, Pa.	....	....	2.26	....	....	2.15	....	....	1.65	....	....	1.00
Danville, Pa.	....	..	2.40	....	..	1.50	....	....	1.60	....	....	1 20
Catasauqua, Pa.	....	....	2.50	....	....	2.10	....	....	1.65	..	....	1.25
Erie, Pa.	2.25	2.50	....	2.00	2.40	....	..	....	2.50	....	....	2.25
Pittsburgh (9 hours), Pa	2.75	3.30	3.00	....	....	2.75	....	....	2.00	....	...	1.50
Bloomsburg, Pa.	....	....	1.75	....	....	1.50	....	....	1.50	....	....	1 25
Wilmington, Del., Machinery	2.00	2.50	2.35	1.40	1.70	1.85	....	....	2.00	1.40	1.66	1.50
Wilmington, Del., (Car wheels)	..	..	1.85	..	..	1.90	.	....	2.05	....	....	1.50
Camden, N. J.	1.75	2.50	2.35	1.85	2.50	2.00	....	.	2.20	1.80	1.75	1.50
Trenton, N. J.	2.25	2.70	.	1.50	2.50	2.00	2.00	2.50	2.25	..	....	1.50
Newark, N. J.	2.50	3.25	2.75	1.50	3 00	2.00	1.75	2.15	2.00	....	....	1 65
Paterson, N. J.	....	....	2.25	1.40	2.00	1.75	....	....	1.75	...	....	1.30
Phillipsburg, N. J.	....	....	2.00	....	....	1.75	....	....	1.50	....	....	1.25
Burlington, N. J.	2.00	2.50	....	1.75	2.00	....	....	....	1.88	....	....	1.50
New York and Brooklyn	2 50	4.00	3.00	2.50	2.75	2.50	1.50	2.40	2.25	1.50	2.25	2 00
Utica, N. Y.	....	....	2.25	2.00	2.50	2.25	....	....	2.00	....	....	1.25
Buffalo, N. Y.	2.00	4.00	2.20	1 25	2.25	2.00	....	....	2 00	....	....	1.40
Rochester, N. Y.	2.25	2.50	....	1.50	2.50	...	1.50	2.00	...	....	....	1.40
Auburn, N. Y.	2.00	....	2.80	...	....	1.65	....	....	1.50	1.40	1.80	1.50
Syracuse, N. Y.	....	....	2.75	....	....	1.75	....	....	1.90	....	....	1.38
Elmira, N. Y.	1.75	2.75	2.00	....	....	1.25	....	....	1.50			80 per ton.
Seneca Falls, N. Y.	....	....	2.00	....	....	1.50	....	....	1.50	....	....	1.25
Dunkirk, N. Y.	....	....	2.30	....	Boys.	1.10	....	....	1 60	....	....	1.30
Brockport, N. Y.	....	....	2.70	....	....	1.25	....	....	1.25	....	....	1.25
Baltimore, Md	2.25	2.50	....	2.00	2.50	....	....	....	1.75	....	....	1 50
Hagerstown, Md.	....	....	1.60	....	....	1.60	....	....	1.30	....	....	1.20
Norfolk, Va	2.00	2.75	2.50	Boys, 3.50 to 4.00 wk.			....	....	1.50	....	....	1 50
Richmond, Va.	2.25	2.50	2 25	1.50	2.00	....	1.25	1.50	1.50	1.00	1.50	1.25
Atlanta, Ga.	..	...	2.75	..	Col'd.	1.35	....	Col'd.	1.25	..	Col'd.	1.15
Athens, Ga.	..	....	2.00	....	boys.	50	....	Col'd.	1.00	....	Col'd.	.75
Augusta, Ga.	....	....	2.50	....	Col'd.	1.50	....	Col'd.	1.00	..	Col'd.	1.00
Savannah, Ga.	2.75	3.50	....	....	..	2.00	....	Col'd.	1.75	....	Col'd.	1.25
Macon, Ga.	2.75	3.00	....	....	...	1.95	....	Col'd.	1 35	....	Col'd.	1.00
Charleston, S. C.	....	....	2.50	....	....	1.85	....	....	2.50	....	....	1.50
Chattanoogs, Tenn.	....	....	2.50	....	....	1.75	....	....	2.50	....	Col'd.	1.00
Anniston, Ala.	....	....	2.75	....	Boys.	.75	....	Col'd.	1.10	....	Col'd.	1.00
Selma, Ala.	....	....	2.75	....	..	1.25	....	Col'd.	1.10	....	Col'd.	1.10
Bessmer, Ala.	3.00	3.25	..	2.50	2.75	.	2.25	2.50	....	1.75	2.25	.
Portland, Maine.	2.00	2.75	2.25	1.00	1.75	1.50	...	....	2.00	..	....	1.50
Boston, Mass.	2.25	3.00	2.50	....	....	2.25	....	....	2.00	....	..	1.66⅔
Providence, R. I.	2.00	3.00	2.50	....	....	2.00	....	....	2.00	1.25	1.40	....
Hartford, Conn	....	....	2.25	....	..	2.00	..	....	2.00	....	...	1.50
New Haven, Conn.	....	..	2.19	....	....	1.50	....	....	1.75	...	....	....
				Boys.	Men.							
Bristol, Conn.	2.00	2.50	.	1.00	1.75	...	....	....	1.75	....	....	1.50
Ansonia, Conn.	2.50	3.00	....	2.25	2.50	....	....	....	2.25	....	....	1.60
Portsmouth, N. H.	....	..	2.25	....	....	1.75	....	....	1.75	....	....	1.50
Cleveland, Ohio.	2.30	2.60	...	1.70	2 10	...	2.00	2.30	....	1.40	1.60	....
Columbus, Ohio.	2.25	2.50	....	1.50	2.50	....	1.75	3.00	....	1.25	2.00	..
Cincinnati, Ohio.	2.33⅓	3.00	2.75	1.75	2.50	2.25	1.66⅔	2 00	2.00	1.00	2.00	..
Louisville, Ky	..	..	2.50	..	..	1.75	....	....	2.16⅔	....	....	1.20
Richmond, Ind.	2.25	2.50	....	1.25	1.75	...	1.50	1.75	....	....	....	1.25
Indianapolis, Ind.	2.40	2.75	2.50	....	....	1 83	....	....	1.75	....	....	1.25
Detroit, Mich.	2.25	3.00	2.50	1.25	2.25	2.00	2.00	2.50	....	1.25	2.00	....
Chicago, Ill.	2.25	3.25	2.75	2.00	2 50	....	2.00	2.50	....	1.50	2.25	n't t'n
Milwaukee, Wis.	....	....	2.50	....	....	1.49	....	..	2.20	....	....	1.45
Leadville, Col.	5.00	4.50	..	....	....	3.50	....	....	3.00	....	....	2.50
Denver, Col.	....	..	3.25	....	...	2.55	....	....	2.25	....	....	2.25
Oakland, Cal.	....	....	3.50	....	....	2 50	....	....	3.50	....	....	2.25
San Francisco, Cal.	2.50	4.00	3.50	2 25	3.75	3.25	2.00	3.00	....	2.00	2.75	2.25

Another Armor Plate Test.—A satisfactory test of 14 inch nickel steel armor was held at the Indian Head proving ground on the 22d inst. This is the thickest armor plate yet tested by the Naval Ordnance Bureau, and naturally the result has been awaited with some interest. The plate came from the Bethlehem Works, where the armor for the battleships is being manufactured under contract. The present plate was the first, the test plate, of the 800 tons of 14-inch diagonal armor intended for the Massachusetts, Indiana, and Oregon. The usual severe conditions which surround the acceptance tests of armor obtained at the trial of Saturday, and, after the firing, an order was sent to Bethlehem by Commodore Folger, the Chief of Ordnance, to complete the order and deliver the material. Three shots were fired at the plate. There was not a crack anywhere visible after the shots, nor a perforation. Altogether this is the best showing made by any armor in any recorded test.

The Foundrymen's Association.

Under this name an important organization has been established in Philadelphia. The membership at first was of a local character, the initial meeting having been held on July 29 last, but a general invitation has been extended to those who are engaged in making castings in green or dry-sand molds, in iron or steel, brass or bronze, or in fact any other metal. The object is to devise means of improving the foundry business, which has been getting less profitable for years, until the outlook is anything but encouraging. The following particulars are taken from a circular recently issued by the association:

At the meeting in September Thomas Devlin of Thomas Devlin & Co., Philadelphia, made a motion that a permanent organization be formed, which was seconded by James Blankley. It was unanimously carried, and the permanent organization was formed, to be known as the Foundrymen's Association, the object being "to promote the interests of foundry owners, and to foster by social intercourse a friendly feeling in the foundry trade." The following officers were elected to serve for the ensuing year:

President, Francis Schumann of Tacony Iron and Metal Company, Philadelphia.

Vice-president, Thomas Devlin of Thos. Devlin & Co., Philadelphia.

Treasurer, Josiah Thompson of I. S. Cassin & Co., Philadelphia.

Secretary, Howard Evans of J. A. Emerick & Co., 1056 Beach street, Philadelphia.

And the following members were appointed to draft a set of constitution and by-laws:

Godfrey R. Rebmann of G. Rebmann & Co.

Thomas Glover of Glover Brothers.

Josiah Thompson of I. S. Cassin & Co.

William Adams of William Adams & Co.

James Blankley of Blankley Brothers & Co.

Ex-officio, Francis Schumann of Tacony Iron and Metal Company.

Ex officio, Howard Evans of J. A. Emerick & Co.

The constitution and by-laws were adopted under date of November 4, and the annual meeting will be held in November, 1892. The following Executive Committee were elected, whose terms will expire on that date:

Walter Wood of R. D. Wood & Co., Philadelphia, chairman.

Col. W. H. Harrison of S. J. Creswell Iron Works, Philadelphia.

Thomas Glover of Glover Brothers, Philadelphia.

L. B. Whitney of A. Whitney & Sons, Philadelphia.

Geo. P. Smyser of E. G. Smyser's Sons, York, Pa.

Ex officio, Francis Schumann, president.

Ex-officio, Howard Evans, secretary.

After a short time Mr Smyser resigned from the committee on account of living such a distance from Philadelphia. He could not attend the frequent meetings, and H. C. Vansant of Morris, Tasker & Co., Limited, was elected to serve in his stead. The above committee will have the general management of the affairs and property of the association, appoint committees from their own members, and adopt such rules and regulations for their government as will best promote the inter-

ests of the association, and not conflict with the constitution and by-laws. They shall arbitrate all questions at issue between members; shall receive all complaints and act upon them, and report their findings for approval to the association. They shall collect all information necessary to the interests of the association, and select quarters for a home and have control thereof. They shall report upon the eligibility of applicants for membership, and fix upon the dues necessary for the expenditures of the association. It shall be their business to arrange social gatherings conducive to the promotion of friendship between members, and suggest topics of interest for discussion, &c.

Meetings are held at the Manufacturers' Club of Philadelphia on the first Wednesday of each month at 8 p.m.

The initiation fee has been fixed at $10 and dues at $12 per year.

Since January 1 there has been formed in the vicinity of Pittsburgh another foundrymen's association, which was directly brought about by the success of the Philadelphia organization. L. M. Morris of the Iron City Foundry of Pittsburgh, Pa., is president; James Hemphill of McIntosh, Hemphill & Co. of Pittsburgh, vice president; Pennock Hart of McIntosh, Hemphill & Co., secretary, and Wm. Holmes of A. Garrison Foundry Company of Pittsburgh, treasurer. Mr. Morris states that he has every reason to believe their association will be a successful one. It is hoped that others will start in the thickly populated districts where foundrymen can meet frequently and discuss matters of interest.

Some of the subjects which have been presented for discussion are as follows:

1. "The wages paid in foundries for molders, core makers, cupola tenders, and chippers." This subject has been gone over very carefully. Letters were written to about 525 foundries throughout the country asking for information as to wages paid in their neighborhood. The result has been printed in the form of a tabulated statement, showing about the actual wages paid in the different cities of the United States from Maine to California, which will be found on another page of this issue.

2. "What effect would it have on the foundry business if scrap iron were brought in free?" This has also been investigated. It was found that if the present duty of $7.62 per ton as paid on pig iron were removed and scrap iron brought in free, the impression seemed to be that it would have no effect on the foundry business, because at the present prices of pig and scrap in this country it would be impossible to import it at a profit.

3. "What is customary among the furnaces in selling iron?" It was decided that the furnacemen intended to deliver to the foundry 2240 pounds for a ton of iron, and that the usual weight allowed for sandage at the furnace was 28 pounds.

4. "What is the best way to get at the cost of castings?" This question is by far the most important of any yet taken up, for the reason that if the foundrymen who do not know the cost of their castings can be taught a plan that will enlighten them, they will not sell them at the ruinously low prices at which some of the firms are now selling. This is a very difficult task for the association to do, as there are so many things that go toward making up the cost of castings, as rent, taxes, insurance, cost of handling and marketing, all go toward the grand total, and at times, for some reason or other, in well-regulated shops accidents will happen that will cause bad castings, that must be broken up and remelted, that must also be taken as part of the cost. The greater part of the April meeting was devoted to this subject, and it had the effect of bringing to the members' minds the possibilities surrounding it. The question was then turned over to the next meeting in May, and it was suggested that they "first get at the cost of the melted iron at the mouth of the cupola," which would be a good part of the journey. They would then continue adding the cost of the molders, coremakers, &c., which would be comparatively easy. The other subjects which are before the association are:

1. "When a casting is sold shall it be sold at the finished weight after being machined, or at the rough weight after coming out of the foundry?"

2. "Should castings be shipped at the same freight rate as pig iron?"

3. "What is customary among the foundries in taking on new men?"

It is the intention of the Executive Committee to procure talent and have addresses made at the regular meetings on various subjects of interest to foundrymen, such as "The tensile strength of iron and its chemical analysis," also the comparative value of coke and coal for fuel, as well as the most economical plan for melting iron in cupolas, &c. They are aware that castings are being sold at much lower prices than they should be, but they have not deemed it proper to talk about putting up the prices, from the reason that other associations have started from time to time, and have endeavored to make a scale of prices at once. They have all fallen by the wayside, from the fact that they have tried to accomplish too much in a short time.

Boilers at the World's Fair.

Some time since contracts for furnishing all the boiler power needed at the fair were awarded as follows:

Heine Safety Boiler Company of St. Louis, for the evaporation of 112,500 pounds of water per hour.

Campbell & Zell Company of Baltimore, 112,500 pounds of water per hour.

Abendroth & Root Mfg. Company of Philadelphia, 45 000 pounds.

Stearns Mfg. Company of Erie, 45,000 pounds.

National Water Tube Boiler Company of New Brunswick, N. J., 45,000 pounds.

Mills Sectional Boiler Company, Limited, of Manchester, England, 90,000 pounds.

The evaporation in all cases was to be from water at 212° to steam of 125 pounds pressure. The total capacity of the plant is 450,000 pounds of water evaporated per hour, or about 15,000 horse-power. The total price paid was $80,000, each company to be paid a pro rata amount. Each company has a separate contract with the Exposition Company and the wording of the contracts is similar in each instance The contract provides that the boiler companies erect, equip, maintain, operate and remove the plant, the Exposition Company to furnish the building and oil for fuel and all piping beyond the trimmings of the boilers. It was mutually agreed by the parties concerned that the boiler plant should be under the supervision of one man, to be appointed by the Chief of Construction, but to be paid jointly by the contractors. The specifications provided that the foundations should be started May 15, the plant to be ready for putting in August 15 and ready for steam September 15 next. It is further provided that the plant must be removed within 60 days after notice from the Chief of Construction at the close of the exposition, but the contractors agree that at least one-third of the entire plant may remain in the service of the exposition until February 1 1894.

It will be noticed that one of the most prominent and largest boiler manufacturing concerns in the United States, the Babcock & Wilcox Company, is not included in the foregoing. Upon inquiry at the Babcock & Wilcox Company's office some two or three weeks ago it was stated that the Babcock & Wilcox Company first made a bid for supplying boilers having a heating surface of 100,000 square feet. No contract was closed on this basis, but afterward a combination of boiler makers was made with whom the exposition officials entered into a contract, as given above, for furnishing a boiler capacity of 450,000 pounds of water evaporated per hour. This practically excluded the Babcock & Wilcox Company, but in justice to the successful bidders it should be stated that some of them agreed to give up a part of their contract in order that the Babcock & Wilcox Company might be represented. This was refused for the reason that the impression might be conveyed that the Babcock & Wilcox Company had only been permitted to make an exhibit through the courtesy of successful concerns. It further seemed doubtful whether they would make an exhibit, because they took the stand that their plant must be absolutely independent of all others in every way, and that all dealings must be made with the commission direct. We are glad, therefore, to state that provision has been made by the withdrawal of the Mills Company for the Babcock & Wilcox Company to make an exhibit of their boilers at the fair, their portion of the exhibit being 90,000 pounds of water evaporated per hour. Their plant will be arranged independent of any and all others, and at the same time all arrangements, as is the case with the others, will be made with the officials direct. This latter arrangement places each company on an independent basis, and the rating and operation of their plant as regards efficiency and capacity can be fully and minutely ascertained.

More War Vessels to be Built.

The Senate on the 19th inst. passed the Naval Appropriation bill, after adopting the amendment reported by the Senate Committee on Appropriations, providing for the construction, in addition to the cruiser authorized by the House, of a battleship, a double-turret monitor, four light draft gunboats, and six torpedo boats. The amendment was adopted by a vote of ayes 33, noes 18. It provides (in addition to the one armored cruiser of 8000 tons provided for by the House bill) for one sea-going coast line battleship, designed to carry the heaviest armor and most powerful ordnance, with a displacement of about 9000 tons, to have the highest practicable speed for vessels of its class, and to cost, exclusive of armament and of any premiums that may be paid for increased speed (with an additional allowance of 3 per cent. if built on the Pacific Coast), not exceeding $4.000,000; one harbor defense double-turret ship of the monitor type, with a displacement of about 7500 tons, to have the highest practicable speed for vessels of its class, and to cost, exclusive of armament and of any premium that may be paid for increased speed, not exceeding $3,000,000; four light draft gunboats of from 800 to 1200 tons displacement, with the highest practicable speed for vessels of their class, and to cost, exclusive of armament and premiums, not exceeding $450,000 each; and six torpedo boats, at cost of not exceeding $110,000 each; and not more than two said torpedo boats shall be built at one establishment.

A London engineer predicts the building of a bridge across the Bosphorus to Constantinople. The estimated cost of the work is $20,000,000, only $1,000,000 less than the cost of the Forth Bridge.

Western Wages.

Announcement is made that the bar iron manufacturers of the Mahoning and Shenango valleys and other points west of Pittsburgh have completed a scale governing wages in their rolling mills, and will present it to a committee of the Amalgamated Association at an early date. It is said that the Amalgamated Association have agreed to appoint a committee to confer with the manufacturers of the Mahoning and Shenango valleys, and that this committee will be separate and distinct from the committee which is to confer with the Pittsburgh manufacturers. As yet no information has been given out as to what reductions have been made in the scale formulated, but it is understood that a rearrangement has been made, and also some very material reductions.

The three year sliding scale at the Homestead Steel Works of Carnegie, Phipps & Co., Limited, at Pittsburgh, also expires on June 30. It will be remembered that this scale is based on 4 x 4 inch billets, the minimum price being $25, below which wages cannot be reduced. In view of the fact that billets have been selling for months at considerably less than $25 it is expected that the new scale will be somewhat lower than the one now in force. It is understood that negotiations are now going on looking to the formation of a new scale, and that several conferences have already been held between members of the firm and a committee from their employees. It is expected that the new scale will be ready for presentation to the workmen before the present one expires.

Examination for Computers and Draftsmen.—John T. Doyle, secretary of the United States Civil Service Commission, Washington, D. C., announces that the commission will hold examinations on the 28th of June, continuing through the 29th, to fill two vacancies in the position of computer in the Coast and Geodetic Survey at $1000 a year, and one in the position of draftsman at $900. Arrangements may be made to hold the examinations in some of the large cities outside of Washington if there should be applicants. The subjects of the computer examination will be orthography, penmanship, letter-writing, algebra, trigonometry, geometry, geodesy and practical astronomy and differential and integral calculus. The subjects of the drafting examination will be letter-writing, geography, arithmetic, algebra, geometry, descriptive geometry, plane and spherical trigonometry, shades and shadows, and drawing. Application blanks may be obtained of the Civil Service Commission. Residents of the District of Columbia are ineligible. Applicants will be required to furnish the necessary implements for drawing.

Last week John Jarrett, who is to assume the secretaryship of the Iron and Steel Sheet Manufacturers' Association, arrived in Pittsburgh and has already had a conference with some of the officials of that organization on mattters pertaining to his new position. Mr. Jarrett expects to open an office in Pittsburgh some time during the present week. It will probably be located in the Ferguson Building.

John G. Evans, for 20 years connected with the Oliver Iron and Steel Company of Pittsburgh, has resigned his position with that firm and will sail for Europe during the present month.

A German geologist claims to have discovered a rich vein of nickel and cobalt 14 feet in thickness and comprising 400 acres about 100 miles north of Cheyenne, Wyo. A specimen was sent to Washington.

Current Technical Literature.

The following list of articles on technical subjects covers the most important papers which have appeared in recent issues of current publications, having special reference to the metallurgy or manipulation of iron and steel or related subjects. The names of the periodicals are given, so that if any person desires to secure a copy of an article he can address the publication direct:

High Potential Transmission. By Elihu Thomson. Discusses direct and alternating currents. *Power*, New York, May.

Engines of the Broadway Cable Road. Built by Dickson Mfg. Company, Scranton, Pa. Illustrations cover perspective, plan and elevation, valve gear, crosshead, &c. *Power*, New York, May.

McEwen Automatic Engine. Built by J. H. McEwen Mfg. Company, Ridgway, Pa. Illustrations cover perspective and details of governor, steam chest and cylinder. *Power*, New York, May.

Twiss Improved Automatic Cut-Off Engine. Built by Nelson W. Twiss, New Haven, Conn. Illustrations cover perspective, sectional view of cylinder, details, &c. *Power*, New York, May.

Cost of a Pound of Glass. By R. M. Atwater. The *American Manufacturer*, Pittsburgh, May 13.

Dalzell Iron and Steel Works, Motherwell, England. Description of plant and illustrations of processes employed in steel works. *Industries*, London, May 6 and May 13.

Technical Education in London. Editorial. *Industries*, London, May 6.

Hand Telescope for Studio Work. Illustrated with cuts showing lenses and targets. By Robert H. Richards. Paper read at October meeting of American Institute of Mining Engineers. The *Engineering and Mining Journal*, New York, May 14.

Long-Distance Telephony. Second article. Illustrations and description cover the apparatus and methods employed. By Herbert Laws Webb. The *Electrical Engineer*, New York, May 11.

Practical Management of Dynamos and Motors. Illustrated. Tenth article. By Francis B. Crocker and S. S. Wheeler. The *Electrical Engineer*, New York, May 11.

Some Disputed Points in Railway Bridge Designing. Live loads, wind pressure, styles and proportion of bridges, intensities of working stresses, combined stresses, plate girder proportioning, general details of construction. By J. A. L. Waddell. "Transactions of Am. Soc. Civil Engineers," New York, February-March.

Difficulties of Tunnel Building. By Emile Low. *Engineering Magazine*, New York, May.

Water Supplies for Cities and Towns. By Floyd Davis. *Engineering Magazine*, New York, May.

A Perfect Railway Curve. By D. E. Hughes. *Industry*, San Francisco, May.

Electricity in Its Relation to Mining. Practical details. Second paper. By Ernest Scott. The *Colliery Guardian*, London, May 6.

Experiments with Alternate Currents of High Potential and High Frequency. By Nikola Tesla. This is the full text of lecture before Institution of Electrical Engineers, London, in which the wonderful effects of these currents were shown. Fully illustrated. The *Electrical World*, May 7, 1892.

Improved Vertical Soaking Pit. Plan views and vertical and horizontal sections of a vertical soaking pit constructed by Alex Laughlin & Co. for the American Iron and Steel Works of Jones & Laughlins, Pittsburgh. *American Manufacturer*, May 20.

Relative Cost of Pig Iron and Slag. By Walter J. May. Discussion of the results of concentrating ores, with reference to the effect on the production of slag. *Colliery Guardian*, London, May 13.

Coal Fields of Montana. By Walter Harvey Weed. Second paper. Treats of the Cinnabar, Gallatin, Judith and Great Falls fields. *Engineering and Mining Journal*, New York, May 21.

Faulting in Veins. By S. F. Emmons. Discusses the question as to whether a vein is likely to be more regular on its dip than on its strike. *Engineering and Mining Journal*, New York, May 21.

Ore-Dressing Plant of the Boston Tin Mine. Description of plant and sectional view of mill used for concentrating tin ore at Irish Creek, Rockbridge County, Va. *Manufacturers' Record*, Baltimore, May 20.

High Service Water Tower at Yonkers, N. Y. Descriptive article, with illustrations covering perspective view, vertical and horizontal sections and arrangement of pipe. *Engineering News*, New York, May 19.

Dry Dock for United States Naval Station at Puget Sound, Wash. Full description with complete illustrations. *Engineering News*, New York, May 19.

Electric Heaters. By W. H. Merrill, Jr., and F. E. Cabot. Discussion of the transformation of current into heat for practical purposes. *Engineering News*, New York, May 19.

Pros and Cons of Iron Car Construction. Editorial discussion of cost and efficiency. *Engineering News*, New York, May 19.

Effect of Temperature on the Tensile Strength and Ductility of Metals. By H. Wade Hibbard. Citations from authorities and tables of experiments. Concluding paper. *Railroad Gazette*, New York, May 20.

Inclined Cable Railroad for Transferring Freight Cars. Complete description of method adopted at Lemp's Brewery, St. Louis. *Railroad Gazette*, New York, May 20.

Carnegie Library, Pittsburgh. Competitive designs for this building by W. Halsey Wood of Newark, N. J., and W. E. Greenawalt of New York. The *American Architect and Building News*, Boston, May 21.

Report Upon Trial of the P. S. "Ville de Douvres." Made by Prof. A. W. B. Kennedy before the Institution of Mechanical Engineers. Paper gives drawings of engine and boilers and results of tests. *Industries* London, May 13, 20.

Compound Electric-Light Engine. Built by Plenty & Sons of Newbury. End and side elevations and brief description. *Industries*, London, May 13.

Iron and Steel in Large Buildings. Description with engraving of metal work in Palace Hotel, Denver. *Scientific American*, New York, May 21.

MANUFACTURING.

Iron and Steel.

The Reading Iron Company, of Reading, Pa., will erect a new pipe mill 178 x 82 feet in size.

No. 2 Sheridan furnace of William M. Kaufman & Co., Sheridan, Pa., has blown in after being closed nearly a month for repairs. Both stacks are now at work.

The Philadelphia and Reading Coal and Iron Company are reported to have issued orders to put in repair the Norway furnace at Bechtelsville, Berks County, and it is expected that the furnace will be put in blast at an early date.

The Warwick Iron Company's furnace at Pottstown, Pa, will be blown out about July 1, it is said, in order to relieve the stack and make repairs. It has been in blast continuously since 1889, and has made a large iron output.

Carnegie Brothers & Co., Limited, of Pittsburgh last week made a small purchase of land adjoining their Edgar Thomson Steel Works at Braddock to be used as a dumping ground for slag. This purchase gave rise to the rumor that the firm had purchased a very large lot of ground and a number of dwelling houses, which we are advised is untrue.

Fannie Furnace of the Wheeler Furnace Company at Middlesex, Pa., went out of blast last week. Ella Furnace of the same firm has been idle for several months. Both stacks were put out of blast on account of the dullness existing in the iron business.

A number of improvements and additions have recently been made to the plant of the Sterling Steel Company of Pittsburgh. The plant of this firm is located at Demmler, on the line of the Baltimore and Ohio Railroad, and the additions have been made for the purpose of prosecuting the manufacture of Wheeler projectiles, large orders for which have been received from the Government.

We are advised that the report that the Coleman-Shields Company of Niles, Ohio, manufacturers of pipe casing and tube iron, were considering the question of removing their plant to Girard, Ohio, is without foundation. They have no intentions at present of removing from their present location.

The plant of the Boston Iron and Steel Company, at McKeesport, Pa., is now turning out about 115 tons of muck bar. This entire production is consumed by the National Tube Works Company, also of McKeesport, which concern is identified with the Boston Iron and Steel Company.

It is rumored, says the Bethlehem *Times*, that the Bethlehem Iron Company will soon erect another blast furnace. It is to be built on the eastern end of their works in a line with the other furnaces. It will be as large, if not larger, than any of the furnaces now standing. The work is to be started in the near future. The company use an enormous quantity of pig iron, and the probability of an increase of consumption in the ordnance department necessitates the erection of another furnace. The work of building the structure for the gun foundry is steadily progressing. It will adjoin the No. 2 machine shop on the east. It will be almost 1000 feet long, and will make the machine shop and forge building twins as to size. It will contain the machinery for the fabrication of the finished guns, which are a large part of last year's $4,000,000 contract.

The Lady Ensley Furnace, at Sheffield, Ala., which has been out of blast for some time undergoing repairs, blew in on the 16th. It is also stated that one of the Cole furnaces of Sheffield, Ala., will commence operations at an early day.

The Sheffield, Ala., furnaces will soon commence the use of Jasper coke. They have made a thorough test of it, and it has given entire satisfaction, producing a good grade of iron at a great saving to the furnace operators.

Negotiations are under way for the removal of the greater part of the Vulcan steel plant at Carondelet, St. Louis, to Alabama, where it is expected that the basic process will be used. The St. Louis Ore and Steel Company, the corporation owning the Vulcan plant, also own one-eleventh of the basic patents. The works at Carondelet have been idle for several years, due to the fact that the mines of Missouri producing ore suitable for Bessemer pig metal are practically exhausted. The property of the company has recently been bought in by the boudholders under a foreclosure of the mortgage of $1,000,000, which had been placed on it. They are conducting the negotiations referred to above.

The Frankford Steel Company of Frankford, Philadelphia, have recently made some notable additions to their steel plant, including a new steam hammer, furnace and crane, and a new 52-inch latbe, 16 tons in weight, for rough turning shaftings and forgings. This is an unusually heavy tool of its class and capable of undertaking the largest work required. It was built for the company by the Baker Engine and Machine Company of Ohio. The works are running to full capacity on orders, and their prospects for the future are extremely promising, owing largely to the increasing demand for their specialty, Tindel's self-hardening steel, which has been found to give the best results when used for machine-shop tools in heavy lathe and planer work and boring and turning mills, &c. The makers claim for this steel that by the Tindel process, in which the metal is allowed to harden naturally in the air, it acquires greater density and toughness, and is therefore particularly adapted for the above purposes.

The new mills of the Cresson Horseshoe and Iron Company, which are being built on a very extensive scale at Max Meadows, Va., are well on toward completion, and it is anticipated that they will commence operations in the course of next month. Their staple productions will be horseshoes and bar iron, and it is said that their horse-shoe mill will possess one of the finest plants in the country. With $500,000 capital and the support of some of the most prominent business men in the East, the success of the new enterprise should be assured.

The Passaic Rolling Mill Company have recently constructed a new templet shop at their works at Patterson, N. J. The building is 50 x 80 feet, two stories high and situated in the material yard at a sufficient distance from the rolling mill and bridge shop to obviate all danger from fire. The building rests on brick piers at about 6 feet above the ground, and therefore, instead of diminishing the yard room, provides an excellent storage place for light shapes and merchant iron. A portion of the building is devoted to a testing room, and has accommodations for inspectors representing the various railroads having contracts there. There is also under construction an addition to the machine shop designed for the special purpose of handling and assembling the large turn table and machinery for the McComb's Dam Bridge across the Harlem River, N. Y., the contract for which the Passaic Rolling Mill Company recently secured. The company will also go to considerable expense in enlarging their plant and purchasing new tools in order to handle this large contract. The principal tools required will probably be a large plate planer, a number of drill presses and a vertical boring mill, the latter for boring the heavy eye bars.

The puddle mill at S. R. Seyferts & Bros.' Iron Works at Seyfert's Station, Pa., has resumed operations, and the plate mill, which has been idle for a long time, has also resumed on double time, giving employment in all departments to over 250 hands.

Machinery.

The Link Belt Engineering Company of Nicetown, Pa., recently built a conveyor for flasks for the McNeal Pipe and Foundry Company of Burlington, N. J., and a complete plant for handling phosphate rock for the Florida Central Railroad Company, which carries from 120 to 130 tons an hour, taking the rock from the cars, storing, and loading into steamers.

The Geiser Mfg. Company of Waynesboro, Pa., near Harrisburg, will during the next two or three months ship 200 threshers and 100 engines to Fargo, Dakota, and another point in that State. The shipments will aggregate 150 cars, and 10 and 12 will be consigned at a time.

The Wilson-Snyder Mfg. Company of Pittsburgh, have received an order for two pumps for delivery to the water works in Cincinnati. These pumps will have an aggregate daily capacity of 3,000,000 gallons.

The firm of Cox & Morrison, manufacturers of boilers of all kinds at Wheeling, has been succeeded by a new company known as Morrison & Chew, who will continue the business in the old location.

The Johnson Company of Johnstown, Pa., having equipped their steel foundry with two 5-ton and one 10-ton Ridgway steam hydraulic cranes, have now decided to adopt this style of crane in other departments, and have ordered them for their switch works. As this large and flourishing establishment already has a hydraulic installation, and also one of the finest electrical plants in the country, this preference for the Ridgway system is a very flattering testimony to its merit. The Midland Steel Company, who are erecting a steel plant at Muncie, Ind., have also decided to adopt the Ridgway steam hydraulic system instead of the usual hydraulic. Mr. Abel, secretary of the Midland Company, was formerly with the Aliquippa Steel Company, who use the Ridgway system. An order for several of the Ridgway cranes has been placed.

The J. H. McLain Company, manufacturers of brass and iron goods for engine builders, steam fitters and plumbers, at Canton, Ohio, have opened a store at 10 South Water street, Cleveland, Ohio, under the management of C. E. McCoombs. They expect to handle a line of machinery and supplies in connection with their own goods, and are open for connections with manufacturers who desire to introduce in that market articles in related lines.

Otis Brothers & Co. of Yonkers, N. Y., have purchased property on Wells avenue, Woodworth avenue and Bashford street, and will erect a substantial brick manufactory to be used for the production of electric motors and other appliances connected with elevators to be operated by electricity.

At Olean, N. Y., about a dozen capitalists have organized the International Steam Power Company for the manufacture of high pressure safety boilers, steam and hot water heaters for public buildings, factories and dwellings, and the Black Giant upset, punch and shear metal worker The officers are: President, E. M Johnson; vice president, G. S. Bussell; secretary and treasurer, G. H. Strong The company is organized under the laws of West Virginia, and is capitalized at $100,000 The company has engaged in the manufacture of a boiler which is the invention of H. W. Moore of Olean. They claim that is a perfect safety boiler. The new boilers are manufactured in two grades and prices. The first will safely run at 180 and 200 pounds working steam pressure, the economy of which is obvious, are capable of standing 550 pounds pressure per square inch, it is said, and are tested up to 410 before leaving the factory. Their extra high pressure boilers will stand 1000 pounds pressure and are tested up to 715 Unequal expansion is provided for. All parts of the boiler are cylindrical in form, rendering them very strong. The company also claim a saving in fuel. Boilers for power or heating are similar in strength and construction and are suitable for either purpose. The Black Giant metal worker has been in use ten years. It is a very serviceable machine in mills, blacksmith and machine shops. At present the boilers are being manufactured in the machine shop of D. S. Abbott and the Black Giant metal workers by J. K. Uhl. As soon as possible the company will erect an extensive manufactory of their own and will largely increase the manufacture of both the boilers and the metal workers. They will also probably engage in the manufacture of other kinds of machinery.

Many years ago Captain Ericsson designed for the Delaware Iron Works of New York a small steam engine intended to drive the electric lighting plant of that large establishment. It is now in the possession of Mr. P. F. Collier The engine was especially remarkable as being designed and regularly operated at the speed of 1200 revolutions a minute at a time when one-fourth that speed was thought enormous, and, in fact, is still considered great. At the suggestion of the director of Sibley College, Ithaca, N.Y., who knew Captain Ericsson, Mr. Collier has presented the machine to the university for use in that college. It is acceptable both as having historical interest and for purposes of experiment and instruction in the laboratory. It will probably arrive at Ithaca in a few days.

The New Haven Boiler Works, Frank H. Elson, proprietor, is one of the new enterprises of New Haven, Conn., occupying a new brick shop 40 x 80 feet, situated 173 to 177 East street, to which will soon be added another building of similar size. Boilers of all descriptions, Hogal dryers for city garbage, tanks and other iron work is their line of manufacture

The Standard Mfg. Company, W. S. Loveland, president; R. Hakewessell treasurer, and E. C. Henn, secretary, are building a new shop on Woodbine street, Hartford, Conn. The building is of brick and is 137 x 40 feet with an L 50 x 35 feet for a brass foundry. This concern produces special machinery, valve tools and a new renewable straightway check valve. The new plant is expected to be ready by August 1.

R. L. Finney, for many years past with the Billings & Spencer Company, and L. E. Rhodes, for the past 20 years a contractor with the Pratt & Whitney Company, have formed a copartnership under the firm nameof Finney & Rhodes, and have established a machine shop in the Board of Trade building, Hartford, Conn. Die sinking and the manufacture of lathes and special machinery will employ the facilities of the firm at present.

R. H. Pierson and William Hardy are preparing to erect a plant at Birmingham, Ala., for the manufacture of engines and other heavy machinery. $100,000 will be invested in the enterprise.

A company to manufacture machinery has been incorporated at Birmingham, Ala., by Andrew Beard and associates, to be known as the Beard Mfg. Company. The company have a capital of $25,000.

New Orleans parties will establish machine shops and a foundry at Birmingham, Ala., to cost $100,000.

The Lodge & Davis Machine Tool Company of Cincinnati, Ohio, have just contracted to furnish the entire equipment of machine tools, including lathes, planers, shapers, milling machines, drill presses, turret lathes, &c., of their latest designs to the new Arkansas Industrial University being located at Pine Bluff, Arkansas.

The Perkins Machinery Company, Atlanta, Ga., are preparing to erect an addition to their machine shops for the manufactnre of saw mills, grist mills, &c.

Edward W. Dawson of New Haven, Conn., and Chas. A. Benton of New York have incorporated under the laws of Alabama the Victor Mfg. Company, with a capital of $200,000, for the purpose of manufacturing radiators, tools machinery, &c. The company will at once erect a plant at Bessemer, Ala., and will also have offices in New York and Chicago.

The Goubert Mfg. Company are making extensive alterations in the premises occupied by them at 32 Cortlandt street, New York, and have doubled the amount of floor space formerly devoted to the carrying on of their large business. They will hereafter occupy the entire second floor of the building in which they are located. In the new arrangement of things the company will have a large room for sample purposes, giving them facilities for the erection and exhibition of the smaller sizes of their well-known feed-water heater, both vertical and horizontal

The entire plant and equipment of the Alex. K. Rarig Company of Buena Vista, Va., will be sold at assignee's sale on June 16, next, on the premises of the company. The plant was constructed in 1890 and went into operation in May, 1891. It was designed for the manufacture of blast furnaces, rolling mills, steel plant, blast engines, stationary engines, all kinds of clay-working machinery, and boilers of every description. The works and yards cover nine

acres of ground, and have a capacity for working from 800 to 1200 men. The buildings are of the following dimensions: Machine shop, 126 x 286 feet; foundry, 126 x 242 feet; blacksmith shop, 126 x 60 feet; cleaning room, 126 x 75 feet; boiler room, 45 x 75 feet; boiler shop, 126 x 212 feet; and pattern shop and storage room, 154 x 256 feet. All the buildings, except the pattern shop, are 38 feet in the clear, and the foundry and machine shop are provided with Shaw 3-motor electric traveling cranes, 50 feet span, and each crane tested to a load of 40,000 pounds. The boiler shop is equipped with a complete hydraulic riveting plant of the latest pattern and design. Each shop is so arranged that a locomotive and cars can be run through their center for loading and unloading machinery and material. The shipping facilities are good. J. E. Mullen, trustee and assignee, has issued a pamphlet of 31 pages giving a list of the machinery and a view of the plant.

The Shaw Electric Crane Company of Muskegon, Mich., have shipped an 80-ton crane to Sandy Hook for use by the Government in handling the guns used at the experimental station at that point. The crane is operated by hand, weighs 62 tons, and is said to be one of the largest of its kind ever made. This is the third crane built by this company for the Government. The works are crowded with orders and are working night and day.

A $40,000 machinery and boiler plant is to be established at Mansfield, Ohio, by Jerry Sullivan, Philip Walters and William Herring, formerly connected for 20 years with the Mansfield Machine Works.

The Patent Steel Die Company will probably be the name of a concern now organizing at Bridgeport, Conn., for the purpose of acquiring and further developing the Champney process of manufacturing steel dies. The capital stock will be $10,000.

At Olean, N. Y., the International Steam Power Company have been organized with a capital of $100,000, and a plant will be established for the manufacture of high pressure safety boilers and steam and hot water heaters.

The Williams Engine Works of Baltimore, Md., are so crowded with orders that they are compelled to work at night, and are contracting with another shop to take hold of some of the work. They are now building yacht engines, standard steam engines and high-speed engines for direct connection to dynamos.

The Chesapeake Belting Company, Baltimore, Md., are putting up a large five-story building as an addition to their works, which will increase their capacity 50 per cent. The necessary machinery, of the newest designs, is being made in their own establishment, and they hope to have it in operation next month. The company's largest market for their specialty of stitched canvas belting is in the West, although they are also shipping largely to the Southern States, and find the demand for their goods an increasing one.

The Link Belt Engineering Company of Nicetown, Pa., now have in hand a Berger endless elevated railway for conveying ore from the United Verde Copper Mine to the railroad at Jerome, Ariz. It is about 5 miles long, and is carried over mountains and valleys and most irregular ground, ascending at times a gradient of 1 in 2. The facility with which the transport has been effected in this railway is due to the peculiarity of the system, the trolleys being run by grooved wheels on an I rail overhead, instead of wire rope. The buckets are connected by an endless chain, and are loaded and dumped automatically. This railway was run for a short time at the end of last season, until stopped by the snow, with complete success, being easily operated by 20 horse-power. Since then some alterations and improvements have been effected on it, and it will be again ready for work by the end of this month.

Hardware.

Bates & Hoyt Mfg. Company, Cuba, N. Y., who are putting on the market butter packages, oil cans and shipping cans, use natural gas for fuel and to run their soldering furnaces. Their factory consists of a mill for manufacturing the veneering for butter packages and oil cans, 40 by 60 feet, two stories, with a dry kiln, 24 x 100 feet. Their tinshop is 40 x 120 feet, two stories high. The wood mill is fitted with the latest improved machinery for the manufacture of veneering and heading, while the tinshop is equipped with a complete outfit of power machinery for the manufacture of butter packages and oil cans. We are advised that the capacity of the factory is 1000 cans per day.

The Carpenters' Tail Screw Company, Dayton, Ohio, whose announcement appears elsewhere in this issue, state that their tail screw has been very much improved since last season by cutting out the wrought iron frame, cast handle, malleable spindle, cut double thread, Bessemer steel, all finely finished and full nickel plated. They also state that over nine thousand were sold last year, distributed among the leading wood-working establishments throughout the United States.

The Birmingham Hardware Specialty and Machine Company has been incorporated at Birmingham, Ala., by S. C. Reilly and George D. Dougherty of Birmingham, and James T. Slater of Biloxi, Miss. The capital stock is $18,750.

A company to be known as The Murray Bicycle Speeder Company has been chartered at Harpers' Ferry, W. Va., by Joseph D. Hill, Washington, D. C., and others, to manufacture bicycle fittings.

The Puget Sound Wire Nail and Steel Company, whose works are at Everett, Wash., started their machinery on the 17th inst., and are now making 500 kegs of wire nails a day. Their product for the present will be wire nails and spikes. They make 12-inch spikes by a new machine, which turns out one spike a minute, either square or round, and with any kind of head desired. The machine works automatically and is said to be the first spike machine capable of this performance. The works of this company consist of a wire-drawing plant in connection with the wire-nail and spike machines. The capacity of the wire drawing plant is 50 tons a day. A. R. Whitney, Jr., is manager of the works.

The Bonney Vise and Tool Company, Philadelphia, have established a considerable export trade, principally with South America and Australia, which absorbs 20 per cent. of their shipments. The company are also supplying several European houses.

Artistic Bronze Company, manufacturers of cabinet hardware at East 155th street and Morris avenue, New York, state that they are continually getting out new designs in ornamental trimmings for furniture, such as are used on dressers, chiffonnieres, wash stands, &c., in various finishes, such as antique, bronze and gold, in stamped and cast brass patterns. They report business excellent. They issue no catalogue owing to the frequent changes in patterns, but show their goods by sample through their travelers. Their Chicago office is 107 Dearborn street.

T. F. Cheriton Hardware Company and Wm. C. Street, 62 Reade street, New York, are agents for New York City, Brooklyn and New Jersey for the sale of the Morse patent wall tie, for bonding hollow walls, securing brick or terra-cotta facings, ornamental work, &c. A description of this article was given in a recent issue. Among the special features they claim for this tie are that they are cheaper, stronger, and simpler than other forms of bonding, and being impervious to frost and non-conductors of moisture, insure a dry interior. They are in use in the Ames Building, Boston, said to be the highest block in New England, and are being called for in specifications by leading architects in various parts of the country and being used in the better class of buildings. With the increased use of hollow walls has arisen a demand for a secure and inexpensive method of bonding, which this article has been devised to meet.

Nicholas Zogg, manufacturer of sash chains and improved attachments, also machinist and toolmaker, has recently established himself at 791 East 144th street, near Brook avenue, New York, and is prepared to execute orders for goods in his line. His agents are Harmon & Dixon, 118 Chambers street, New York.

Francis Keil & Son, 163d street and Brook avenue, New York, are manufacturing a large and complete line of builders' hardware in various styles and finishes, and now have in course of preparation a new catalogue which they hope to have ready for distribution the coming fall. Their works are conveniently located both for receipt of raw materials and shipment of the finished product. They state business is satisfactory and for the spring decidedly in advance of the corresponding months last year.

The Maryland Screw Company, Baltimore, have sold out their interest in the screw business, and have started this month under a new organization, with the title of the Maryland Mfg. Company, and will in future devote themselves to the manufacture of rivets and light hardware. Their business is carried on at the same works on Guilford avenue and Oliver street, Baltimore, where suitable machinery for the new class of goods has been introduced and considerable additions and alterations are in hand. The new plant will include 13 automatic machines for rivet making, and a full line of rivets and stove, tire and sink bolts will be produced. The officers of the Maryland Mfg. Company are: W. S. Dorman, president; Geo. P. Cockey, vice-president, and Alan Cole, treasurer. The works are already in active operation.

Miscellaneous.

At Auburn, N. Y., a new industry is soon to be established. It is said that employment will be given to 300 hands. The new buildings are being erected by D. M. Osborne & Co., and will be used when completed for the manufacture of binding twine, rope, &c. The main building is 100 x 300 feet, and is progressing rapidly toward completion. It is thought that it will not be a great while before the new plant is in operation.

Among recently authorized corporations in Illinois are the following: The Leclaire Steel Company, Belleville; capital stock, $50,000; incorporators, James C. Waugh, George W. Stanley and William B. Switzer. The Galesburg Electric Motor and Power Company, Galesburg; capital stock, $213,000; incorporators, P. W. Johnson, William J. Kellogg, E. A. Bancroft and Henry Arnold. The Daniels Lock Company, Chicago; capital stock, $100,000; incorporators, Henry H. Daniels, M. M. Nesbitt and M. B. Dean. Spring Wheel Bicycle Company, Chicago; capital stock, $50,000; incorporators, Albert Ransom, Joseph Ridge and Gus A. Saulberg. The Chicago Pure Aluminum Company, Chicago; capital stock, $10,000; incorporators, Charles A. Taylor, Jr., Charles G. Davies and William P. Rounds. The Security Cash Register Company, Chicago; capital stock, $150,000; incorporators, E. B. Wringer, Henry C. Butler and Oscar B. McGlasson. Standard Compound Engine Company, Chicago; capital stock, $150,000; incorporators, John B. Kinzie, John B. Bancroft and Delos Carskaden. The Sanitary Construction Company of Chicago; capital stock, $300,000; incorporators, J. Ballen, Henry N. Mann and Francis S. E. Gunnell. The Western Foundry Company, Chicago; capital stock, $10,000; incorporators, Denis T. O'Neil, Nicholas F. Purcell and Robert Nichol, Jr. United States Wire Mat Company, Decatur; capital stock, $20,000; incorporators, William T. Wells, Charles M. Hurst and Samuel R. Gher. The Bradley General Electric Company, Chicago; capital stock, $1,000,000; incorporators, Homer C. Hartman, E. S. Douglas and Francis I. Furber. Chicago Twin Wire Long-Distance Telephone Company, Chicago; capital stock, $2,500,000; incorporators, A. P. Hunnemann, W. S. Bates and R. D'Unger. The Graf Iron Melting and Mfg. Company, East St. Louis; capital stock, $30,000; incorporators, Harry J. Graf, John W. Chapman and Jesse A. Vail. The Columbian Steam Pump Company, Chicago; capital stock, $150,000; incorporators, Clarence Barnham, Thomas K. Hoyne and Schuyler C. Reber.

The appropriation of $346,000 recently made for the equipment of the south wing of the Watervliet Gun Factory, at West Troy, N. Y., will complete the plant. This year's appropriations will bring the total expenditures upon the Watervliet plant alone up to about $5,250,000, while it is said fully the same amount has been expended on materials, wages, &c., in the operation of the gun factory.

The Indurated Fiber Pipe Company and the Indurated Fiber Industry Company, whose works are at Mechanicsville, N. Y., have been consolidated and reorganized as the Fiber Brick Company, with a capital of $200,000.

Hoosick Falls, N. Y., has raised one-half of the amount required to secure a manufactory of steam road rollers, steam engines and centrifugal pumps.

The Cleveland Cast Iron Pipe Works of New Philadelphia, Ohio, have been sold to J. B. Clow & Son of Chicago, who will put the works in operation at once.

The Diebolt Safe and Lock Company have been awarded the contract for building a $35,000 jail at Columbus, Ga.

B. Luttrell, E. F. Wiley and associates have incorporated the West Knoxville Mfg Company, at Knoxville, Tenn., to manufacture grates, mantels, &c.

The Flexible Wire Plow Line Company, with a capital of $125,000, have been chartered at Talbottom, Ga. O. D. Gorman is president of the company and Jas. A. Spain secretary and treasurer. They state that they will erect plants at Chattanooga, Tenn., Atlanta, Ga., Birmingham, Ala., and Talbottom.

The extension of the foundry department of the Southern Malleable Iron Company's plant, at Chattanooga, Tenn., has been completed, thereby greatly increasing the capacity of the plant.

The Stewart Wire Company have been organized at Easton, Pa., with a capital of $400,000, to succeed Stewart & Co. The plant of the company will be enlarged.

Some of the enterprising citizens of Llano County, Texas, have prepared an exhibition car containing 22 varieties of granite, six of marble, Bessemer iron ore, silver, copper and gold ores, silica, soapstone, graphite, mica,

garnet, amethyst, white onyx, topaz, moss-agate, red and yellow ocher, zinc and tin ores and a large number of other specimens and it will make a tour advertising the resources of that section.

The largest water-pipe casting ever turned out in Chattanooga was made recently at the Chattanooga Foundry and Pipe Works. The casting was for the Atlanta Water Company and weighed 3300 pounds.

The Buffalo Car Wheel Company of Buffalo, N. Y., will largely increase the capacity of their plant.

It is said that the Pittsburgh Reduction Company will increase the size of their present works at Kensington, Pa., and will also erect a rolling mill for rolling aluminum in the near future.

The Virginia Mining and Investment Company have just sold to the Virginia Iron and Railway Company of Goshen, for the Rockbridge furnace, 20,000 tons of Mine Bank brown hematite ore. This sale, says the Staunton *Daily News*, is gratifying evidence of Virginia's ability to manufacture iron at a living profit, even in the present depressed condition of the market. Too much praise cannot be bestowed on the energy and ability with which the Virginia Mining and Investment Company have pressed to completion their works near Cotopaxi, where they are now putting out daily about 150 tons of ore and about 400 tons of crushed stone ballast for the Norfolk and Western Railroad.

The Cleveland Rubber Company of Cleveland, Ohio, manufacturers of mechanical rubber goods, clothing, cotton hose, &c., are operating their factories night and day on their patent process seamless tube hose. Their Minneapolis store will be managed after June 1 by H. G. and W. P. Plant.

F. W. Heitman & Co. of Houston, Texas, have been given the agency for the Cleveland Rubber Company's mechanical goods in Southern Texas.

The Richmond Cedar Works of Richmond, Va., are asking for prices for delivery at Greenville, Ala., on the following: 11½ miles of 35, 40, 45 or 50 pound steel or iron rails, old or new, will take in mixed lots; also fastenings for these rails; one second-hand 30-ton freight locomotive and tender (if in good order), standard gauge, about 14 x 20 inch cylinders; five to ten flat cars, standard gauge.

Green & Linehan of the Union Iron Foundry, Frankford, Pa., report their foundry business as booming. They are busy in turning out heavy castings, in loam or dry sand, for a number of prominent manufacturers of machine tools, including Bement & Miles of Philadelphia and Detrick & Harvey of Baltimore, and have received most encouraging commendations as to the satisfactory nature of their work.

A peal of ringing bells, claimed to be the largest in this country, has been shipped from the Clinton H. Meneely Bell Foundry, Troy, N. Y., to St. Agnes' Chapel, New York City, where they will be hung in the belfry. It is the Westminster peal of four bells. The largest bell weighs 6500 pounds, is 68 inches in diameter and 66 inches in height. Three thousand pounds is the weight of the next in size, and its greatest diameter 53 inches. The third in size weighs 2000 pounds and has a diameter of 46 inches. The smallest in the peal tips the scales at 1500 pounds, and its diameter is 42 inches. The bells are tuned in B flat, E flat, F and G, respectively. The weight of the entire peal aggregates 13,000 pounds. The metal in the peal is a composition of Lake Superior copper and tin, and the bells were about nine weeks in process of construction. The clapper rods are of iron and have on the ends a ball of intensely hard Mexican wood, which causes the peal to produce a soft, sweet sound, very desirable in a city like the metropolis. The peal is inscribed, and is set up in Georgia pine mountings and presents a beautiful appearance.

The Peck, Stow and Wilcox Company of Southington, Conn., are using the process for tinning cast iron of W. T. Flanders & Co. of Nashua, N. H., and are now arranging to increase the capacity of that department. Messrs. Flanders & Co. have contracts for the erection of galvanizing works at Superior, Wis., St. Paul, Minn., and Benton Harbor, Mich. Among the establishments which now have the Flanders process in successful operation are the Shepard Hardware Company of Buffalo, N. Y., on freezer castings and fruit presses, the White Mountain Freezer Company of Nashua, N. H., on freezer castings, &c., the Enterprise Mfg. Company of Philadelphia on meat choppers and other castings; the Griswold Mfg. Company of Erie, Pa., on tea kettles and other cast-iron hollow ware; the Cleveland Foundry Company of Cleveland, Ohio, on general job work. The cost of tinning by this process runs from $18 per ton for ordinary castings to $35 per ton for hollow ware.

TRADE REPORT.

Our advices from the leading trade centers this week are almost uniformly discouraging. Pig Iron continues to be seriously depressed, the restriction of production thus far made having failed to affect the market in any respect. Too many furnace companies are pressing their product for sale to permit any improvement in prices. Philadelphia, Pittsburgh and Chicago seem to be subject to precisely the same influences. While the so-called standard brands are well held, the makers of Pig Iron less favorably known are taking lower and lower prices. An inevitable settling of values in general to a still lower level seems to be impending unless there is very shortly a decided improvement in the demand. As long as Pig Iron is depressed it seems futile to look for improvement in other lines of trade.

Steel Billets are still weak, with sales reported in Eastern Pennsylvania at equivalent to $22, Pittsburgh. Western buyers are holding off, waiting for a further decline.

Wire Rods are much firmer, as the mills are all sold up to July 1, and in some cases beyond that.

Steel Plates have gone at very low figures the past week. Competition is very keen between makers at Pittsburgh and those of Eastern Pennsylvania. It is reported that bids of 1.77½¢, delivered, have been beaten for Tank Steel.

The Western farm implement makers are recovering from their apprehensions of bad trade caused by the backward season and are now placing orders for their usual supply of Manufactured Iron and Steel.

The Chicago boiler makers' strike has paralyzed business in that section in Plates and boiler supplies, and is causing uneasiness among those who are pushing forward new enterprises.

Large transactions have recently taken place in Steel Cotton Ties on the basis of 2¢ ₱ lb, delivered at Southern points. This price is said to be below anything before known in the Cotton Tie trade.

The Lake Superior Iron Ore trade is very quiet. The only transactions reported at Cleveland for the past week have been in small lots.

Our Metal market reports show no new developments in Copper, speculative operations on a large scale in Pig Tin, a firm tone in Lead and export inquiries giving a better outlook for Spelter. Tin Plate is somewhat irregular, with free arrivals and a moderate demand.

Our London cable dispatch states that stocks of Pig Iron in warrant stores have been further reduced; but in the face of this the price of Scotch warrants has dropped, although Cleveland and Hematite warrants have advanced. It is reported that the Durham coal miners are willing to resume work at 10 % reduction in wages, but the owners have declined to entertain the proposition.

The English Copper market has been irregular, owing to conflicting reports about the agreement for restricting production. The latest proposition is for a 5 % reduction by English producers and an aggregate corresponding reduction in American output on a sliding scale.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., May 24, 1892.

The week has closed without anything to indicate that there is, or is likely to be in the near future, any material change from the conditions which have prevailed for many weeks past. Prices show no tendency toward improvement, and although sellers try to explain sales at low prices by saying that the sales was due to exceptional circumstances, the fact that there are so many transactions of that character leads to the opinion that there are more weak spots than the trade like to acknowledge. There is more business in some lines, however, and to that extent the market looks better, but beyond that the immediate outlook is not encouraging.

Pig Iron.—To judge from the way low prices are talked about it might be supposed that another decline had been met with, but such a conclusion would not be entirely in accordance with facts. Nevertheless, it is no easy matter to maintain prices, and if that is done, it is the utmost that can be claimed. The pressure of Southern Irons is so great and so continuous that buyers are continually beset with offers of "a trial lot," "an odd car lot shipped by mistake," or for some exceptional reason; "job lots" are always on hand. In this way No. 1x has been offered at less than $14.50, delivered Philadelphia, and while a quotation of that kind is very far from fairly representing the market, it is met with often enough to have its effect on both buyers and sellers. Quite a number of leading brands find buyers at from $15.75 to $16.25, and from that all the way down to $15 are ordinary quotations, prices varying according to quantity, brand, point of delivery and similar considerations, but, as already stated, "special lots" are not infrequently met with at 50¢ to 75¢ below even the lowest ordinary quotation. Mill Irons are relatively steadier, $12.75 @ $13 25 being fairly firm quotations, unless for deliveries in which freights enable sellers to concede something additional. On the whole, therefore, not a single encouraging feature has been developed, unless it be a large volume of business, and it looks very much as though the market would be weak and unsettled for some time to come. But at bottom prices and for long deliveries many leading buyers are taking larger quantities than usual, from which it may be inferred that whatever may occur temporarily, they have absolute faith in the ultimate result. Subject to the exceptions above mentioned, we quote about as follows, with somewhat lower figures on some Southern Irons at

such points as Baltimore, Wilmington, York, Harrisburg, &c.:

American Scotch, No. 1x	$17.00	@	$17.50
American Scotch, No. 2x	16.00	@	16.50
Standard Penna (Lake Ore), No. 1x	15 75	@	16 25
Standard Penna. (Lake Ore), No. 2x	14 75	@	15 25
Standard Penna. (Lake Ore), No. 2 plain	13.50	@	14.00
Medium Quality, No. 1x	15.00	@	15.50
Medium Quality, No. 2x	14.00	@	14.50
Standard Virginia, No. 1x	14.75	@	15.25
Standard Virginia, No. 2x	14.00	@	14.50
Medium Va. and Southern, No. 1x	14.50	@	14.75
Medium Va. and Southern, No. 2x	14.00	@	14.25
Standard Penna. and Virginia Forge	13 50	@	14.00
Ordinary Forge	12.75	@	13.25
Hot-Blast Charcoal	18.50	@	21.00
Cold-Blast Charcoal	24.00	@	26.00

Steel Billets.—A considerable amount of business has been done during the past week, but at prices below anything ever before heard of. Several lots have been taken at about $24.50, delivered at points equivalent to Philadelphia, and it is understood that one lot of several thousand tons has been done at a materially lower figure, but how much lower no one seems disposed to state definitely, except that it was little, if anything, over $22, Pittsburgh. Under such conditions buyers feel almost as demoralized as sellers are, because no sooner is a purchase made at what seems to be an absolutely safe figure than new transactions are made at one lower still. For the present, therefore, there is a disposition to await developments. Good sized lots were taken to secure special rates of freight, but from later developments it seems that orders can yet be placed at bottom figures, if not at lower figures.

Steel Rails.—There is no improvement in demand, which is still confined to small lots for prompt delivery. Prices steady and unchanged at $30, at mills.

Muck Bars.—Business is very quiet, the demand almost being a thing of the past. Asking prices are from $24.50 to $25.50, delivered, price according to quantity, quality, delivery and size of Bar. Sales yesterday of a choice lot at pretty near to the outside figure.

Bar Iron.—Market quiet at unchanged prices. There is not a single new feature so far as we can find, so that last week's report might be repeated almost *verbatim*. Some mills manage to run full, but not a few have to work very irregularly, as there is not near enough business to go around. This naturally causes a wide range in prices, some special makes bringing 1.70¢ @ 1.75¢, while others claiming to make first class Iron have to take nearly $\frac{1}{10}$¢ less. General quotations may be given as 1.60¢ @ 1.65¢ on cars at interior points, and 1.65¢ @ 1.75¢ for city deliveries, although on desirable orders prices are not hard to shade.

Plates.—Prices are terribly demoralized, and instead of getting better they seem to be even worse than before. Orders for several hundred tons of light Tank Steel were taken here a few days ago at prices below anything ever heard of, and unfortunately the same thing may be said in regard to the higher qualities, prices of which are even lower relatively than the commoner qualities. In such cases it is neither possible nor desirable to give exact quotations, but we are informed that bids of 1.77½¢, delivered, have been beaten for Tank Steel. Boiler Steel is quoted all the way from 2.10¢ to 2.50¢, price varying according to quantity, specifications and requirements as to quality. The demand is not large, however, and for the present the market shows no signs of improvement. General quotations are about as follows:

	Iron	Steel.
Tank Plates	1.80 @ 1.90¢	1.75 @ 1.85¢
Shell		2.10 @ 2.20¢
Flange	2.70 @ 2.90¢	2.30 @ 2.40¢
Fire Box	3.00 @ 4.00¢	2.60 @ 2.80¢

Structural Material.—There is a moderate degree of activity as regards small and medium-sized lots, but large orders are still conspicuously absent. Mills are irregularly employed, some full, others nearly empty handed, causing sharp competition for every new order that comes on the market. Prices are very weak, and while quotations are nominally as follows, concessions are easily obtained when the order is large enough to make it an object: From 1.80¢ to 1.90¢, delivered, for Bridge Plates; 1.80¢ @ 1.90¢ for Angles, and 2.10¢ @ 2.30¢ for Beams, Channels or Tees, price depending on size of order.

Sheets.—The demand has fallen off in a very marked degree within the past week, and under strong competition prices are somewhat lower. For the best makes quotations are about as follows, although there are plenty of Sheets at lower figures, but all depends on quality.

Best Refined, Nos. 14 to 20	2.40¢ @ 2.60¢
Best Refined, Nos. 21 to 24	2.90¢ @ 3.00¢
Best Refined, Nos. 25 to 26	3.10¢ @ 3.15¢
Best Refined, No. 27	3.30¢ @ 3 40¢
Best Refined, No. 28	3.40¢ @ 3 50¢

Common, ¼¢ less than the above.

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about ¼¢ lower than are here named:

Best Soft Steel, Nos. 14 to 20	3¢ @ 3½¢
Best Soft Steel, Nos. 21 to 24	3¼¢ @ 3¾¢
Best Soft Steel, Nos. 25 to 26	3½¢ @ 3¾¢
Best Soft Steel, Nos. 27 to 28	3¾¢ @ 4¢

Best Bloom Sheets, ¼¢ extra over the above prices.

Best Bloom, Galvanized, discount	@ 70 %
Common, discount	@ 72½ %

Old Material.—Market extremely dull, with prices weak and drooping. For such lots as consumers need, prices are about as follows, but on forced sales lower figures would have to be accepted: $16 @ $16.75, delivered, for Heavy Steel Scrap, and up to $19 @ $19.50 for low phosphorus. General quotations about as follows: Iron Rails, $20, spot, or $21, delivered; Steel Rails, $16 @ $16.50, delivered; No. 1 Railroad Scrap, $18 @ $19, Philadelphia, or for deliveries at mills in the interior $18.50 @ $19, according to distance and quality; $13 @ $14 for No. 2 Light; $13 @ $14 for best Machinery Scrap; $13 @ $14 for Wrought Turnings; $9 @ $10 for Cast Borings, and nominally $22 @ $24 for Old Fish Plates, and $15 @ $16 for Old Car Wheels.

Justice Cox, Jr. & Co. have been appointed sales agents for the Pulaski Iron Company of Pulaski, Va. This brand has secured a most enviable reputation in all leading markets on the Atlantic Coast, which will doubtless be maintained under the sales agency of this well-known house.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, May 25, 1892.

Pig Iron.—Some sales of small lots of Charcoal Iron are reported at $16.50, but the demand is neither urgent nor large. Good authorities say that sales of small lots for immediate delivery have also been made at $16, and that this price was refused on orders covering extended deliveries. Whether this be correct or not, it is certain that the price is less firm than a week ago and that buyers are aware of the fact. Until the market either breaks to $16 or uniformly supports $16.50, and discountenances all lower offers, there will be no change from the present dull and unsettled condition of the trade. The market for local Coke and Southern Coke Foundry Irons bears the appearance of having touched bottom, so far as can be seen now. Small buyers are willing to pay 25¢ a ton advance on prices made on ten months' contracts, and orders for a reasonably good tonnage have been placed on this basis in lots ranging from 100 to 500 tons. The demand for Southern No. 2 Soft Irons is stronger, and prices a little firmer, having been advanced on some grades 25¢ a ton from the lowest figures. This may result from the lowest sellers having booked all they care to sell at this time. There is scarcely any demand for No. 1 and not much of it made. Prices on Gray Forge and Mottled are weaker and less regular. It is probable that three-fifths of the sales now made are at our minimum quotations on any of the leading brands mentioned. Some sellers will shade the price 25¢ ₱ ton on 1000-ton lots. We make the following quotations, cash, f.o.b Chicago:

Lake Superior Charcoal	$16.50	@	$17.00
Local Coke Foundry, No. 1	14.50	@	15.00
Local Coke Foundry No. 2	14.00	@	14.50
Local Coke Foundry, No 3	13.50	@	14.00
Local Scotch	15.00	@	16.00
Ohio Strong Softeners	16.50	@	17.00
Southern Coke No. 1	15 00	@	15.50
Southern Coke, No 2	13 85	@	14.25
Southern Coke, No. 3	13.35	@	13.75
Southern, No. 1 Soft	13.75	@	14.25
Southern, No. 2, Soft	13.35	@	13.50
Southern Gray Forge	12 75	@	13.25
Southern Mottled	12.75	@	13.25
Tennessee Charcoal, No. 1	17.50	@	18.00
Alabama Car Wheel	21.00	@	23.00
Coke Bessemer	15 50	@	16 00
Hocking Valley, No. 1	17.00	@	17.50
Jackson County Silvery	17.00	@	17.50

Bar Iron.—The extremely low prices that have been made are not improving business. The selling price is never so low that buyers do not try for still lower figures, and the fact that Bar Iron is selling at nearly the lowest price in the history of the market does not increase the number of orders or the quantity of material ordered. Some of the makers insist that their price on Bars is 1.50¢ at mill; others claim 1.60¢, Chicago, but the fact remains that most of the business is being done on prices that range from 1.40¢ to 1.45¢, half extras, at mill, according to rate of freight to competitive points and the character of specifications. There is a very fair demand for Soft Steel Bars, and prices reported steady at 1.70¢ rates, Chicago.

Structural Iron.—At this moment the market is not very active and yet many inquiries are being made on bridge and building shapes. Correct estimates of the damage sustained by railroads from floods have not been made, but nearly all roads in the West expect that new material to some extent will be necessary for repairs. Several nice orders for building shapes were placed recently and the prices named on these orders would indicate that mills are prepared to make some very close prices on the large quantity of material that will be required later in the season. On round lots delivered in Chicago 2¢ is the ruling price on regular sizes for Beams and Channels, 1.90¢ for Angles, 1.90¢ for Universal Plates, and 1.95¢ for Sheared Plates.

Billets and Rods.—Makers report small lots of Billets $24.75 and Rods at $34.50. On competitive business these prices would be shaded sufficiently to secure the business. The demand for Rods was less active and very little doing in Billets.

Rails and Track Supplies.—The demand for Rails continues in about the same ratio as for weeks past and makers still quote at $31.50 @ $32 for prompt shipment and $31 for fall delivery. Iron Splice Bars are quoted at 1.70¢ and Steel at 1.75¢. Track Bolts, Hexagon Nuts, 2.62½¢ and Square, 2.55¢.

Merchant Steel.—There is an improvement in the market for Bar Steels and agricultural shapes. A number of orders for the season's supply were placed by implement makers, and the demand from regular consumers has increased. The uneasiness caused by the floods has, in a measure, been allayed and buyers are feeling more hopeful. Prices are quite low

but steady, and as buyers do not see much chance for further decline they are inclined to buy liberally of standard sizes and grades when placing orders. Open Hearth Spring, Tire and Machinery Steels are quoted at 2¢ @ 2¼¢, varying according to brand and quality. Crucible Spring Steel, 3½¢ @ 4¢; Machinery, 4½¢ @ 5¢; Tool Steels, ordinary grades, 6½¢ @ 8¢; Specials, 25¢.

Plates, Tubes, &c.—There is no business and no change in prices. The boiler makers' strike has killed all trade and intimidated country manufacturers so that they are afraid to buy material or take contracts. There is considerable business that would be placed at once if work could be got out, and much more in sight for new buildings that have been let and for which plans are being prepared. Manufacturers are becoming anxious to dispose of material and are offering to shade prices, which in the face of no trade of consequence from consumers is a very peculiar movement. Tubes are also affected by the same conditions. There is only a light demand and yet prices are weakening all the time. Quotations are nominal and unchanged on the small orders that are being supplied.

Sheets.—There is an excellent market for Black Sheets, and prices are quite firm at 2.70¢ for No. 27 at mill for Iron Sheets and 10¢ advance for Steel, although the latter is not demanded by all makers. The demand for Galvanized has been improving and prices are consequently stronger. Makers, so far as can be learned, are not quoting less than 70 and 10 % off to the best trade and 70 and 5 % off to the carload trade on Juniata at mill. Jobbers are quoting 70 % off on small lots from store.

Old Rails and Wheels.—We hear of several transactions in Old Iron Rails at prices ranging from $18 to $19. Old Steel Rails are dull and nominally at $12.50. Some small lots of Old Wheels have changed hands at $15.25. The demand is light and stocks plentiful.

Scrap.—The market is still quiet and prices weak. Consumers can pick up what they want at their own terms. Stocks of every description are a drug on the market. Dealers' prices are nominally as follows per net ton, f.o.b. Chicago: No. 1 Forge, $14.50; No. 1 Mill, $10; Pipes, $9.25; Wrought Turnings, $8.50; Mixed Steel, gross ton, $10.

Metals.—The market is about the same as last week. Spelter is firm at 4.75¢, and in fair demand. Casting brands of Copper are quoted at 11.75¢, and Ingots at 11.95¢. Pig Lead was in fair demand and steady at 4.12½¢. For Missouri Soft in 100-ton lots small lots are quoted at 4.35¢ by dealers.

Cincinnati.

(*By Telegraph.*)

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, May 25, 1892.

There does not appear to be a shadow of change in the Iron trade. Business is confined to supplying the consumptive requirements of the trade, and even these are small, for the larger consumers are working on old contracts and will be for some time to come. There is not yet sufficient confidence on the part of buyers to enter the market for round lots, for which they would have to pay full current prices, if not a little more, for the larger Iron companies are not urging their stocks, and, in fact, are indifferent about selling for forward delivery unless they can secure an advance. There appears to be a satisfactory volume of consumption in progress. The Iron Pipe works here are doing more, and in the South they are running to their full capacity. The car works and repair shops are full of orders and most of the foundries are doing full work and if there is not a reduction in stocks of Iron at the furnaces during this month the current impression will be greatly at fault. It is not expected that the trade will improve much this month or next, for there is too much Iron in sight, and it will require time to reduce stocks so as to give consumers confidence that higher prices would be justified, but there is much encouragement to sellers in the fact that no lower prices have been made, and they think the turn of the market is in sight. Quotations unchanged, as follows:

Foundry.	
Southern Coke, No. 1	$13 75 @ $14 00
Southern Coke, No. 2	12.75 @ 13 00
Southern Coke, No. 3	12.25 @ 12 50
Ohio Soft Stone Coal, No. 1	16.00 @ 16 50
Ohio Soft Stone Coal, No. 2	15.00 @ 15 50
Mahoning and Shenango Valley	16 00 @ 17.25
Hanging Rock Charcoal, No. 1	19.75 @ 20 00
Hanging Rock Charcoal, No. 2	19.00 @ 19 50
Tennessee and Alabama Charcoal, No. 1	16.50 @ 17.00
Tennessee and Alabama Charcoal, No. 2	15.50 @ 16.00
Forge.	
Gray Forge	11.75 @ 12.00
Mottled Neutral Coke	11.25 @ 11.50
Car Wheel and Malleable Irons.	
Standard Southern Car Wheel	18.75 @ 19.00
Lake Superior Car Wheel and Malleable	17.75 @ 18 00

Cleveland.

CLEVELAND, OHIO, May 23, 1892.

Iron Ore.—As predicted in last week's letter, the receipts of Ore at Cleveland by lake the past week have been in excess of previous weeks the present season. In round figures the number of tons of the mineral received were 49,164, as compared with 151 tons received during a corresponding period last season. The receipts of Ore at Cleveland were almost nothing at this time last year, the strike being responsible. The outlook for freight carriers looks brighter than at any time since January, when many owners refused $1.25 on Ashland Ore contracts. The supply of boats has been very much below the demand during the past week or ten days. The rate for bringing Ore from Escanaba remains at 75¢. From Ashland and Two Harbors the rate is $1.20, while a few charters are reported at $1.25. Charters from Marquette are quoted at $1, nominally. Movement of Ore to the furnaces compared with last year is a matter of considerable interest. During the past week the shipments amounted to 24,270 tons. For the same week in 1891 only 5316 tons went to the furnaces. It will be seen that the shipments are very much larger than they were last year, but at that time the movement was much interfered with by the Ore handlers' strike. A few sales of Ore have been reported the past week, but the transactions were in small lots. In fact, the entire Ore market has been without features of interest so far as sales are concerned. Quotations for Ore here are as follows:

No. 1 Specular and Magnetic Ores, Bessemer quality	$5.00 @ $6.00
No. 1 Specular and Magnetic Ores, Non-Bessemer quality	4.25 @ 4.75
Red Hematite Ores, Bessemer quality	4.25 @ 4.50
Red Hematite Ores, Non-Bessemer quality	3.50 @ 4.00

Pig Iron.—There is absolutely nothing new or of interest in the Pig Iron market. A few sales are reported, but only in very small lots, and these, of course, as heretofore, at low prices. There is no change from last week's quotations, but it would be next to impossible to name the price at which Pig Iron might be bought in anything like large lots. The effort for curtailment of production continues, and sellers would be jubilant if there could be a little cutting down in the cost of making as well as in the volume of production. In this connection they have cause for complaint at prices for Coke, which is being sold, it is said, at slight concessions to Eastern furnaces, while prices to Western furnaces are old prices. Some of the furnaces—in fact, all the big ones in which Cleveland capital is represented—have gone out of blast. Following are quotations:

Nos. 1 to 6 Lake Superior Charcoal	$17.50 @ $18 00
Nos. 1, 2 and 3 Bessemer, per ton	15.00 @ 15 25
No. 1 Strong Foundry, per ton	15.00 @ 15 50
No. 2 Strong Foundry, per ton	14.00 @ 14.50
No. 1 American Scotch, per ton	@ 15.00
No. 2 American Scotch, per ton	@ 14.00
No. 1 Soft Silvery, per ton	15.50 @ 16.50
Mahoning and Shenango Valley Neutral Mill Irons, per ton	13.50 @ 14 00
Mahoning and Shenango Valley Red Short Mills, per ton	14.00 @ 14.50

Nails.—The Wire-Nail market has been rather easy the past week, and the Cut Steel-Nail market dull. Steel Wire Nails are quoted at $1.70 and Steel Cut Nails at $1.65.

Scrap Iron.—But little has been done the past week in Scrap Iron, and the market is dormant. No. 1 Railroad Wrought is quoted at $17 @ $17.50, Cast Scrap at $12 and Steel Rails and Bloom Ends at $15.75 @ $16.25.

Old Rails.—There is an occasional transaction reported in Old Rails, but the market is far from active. Old Americans are quoted at $19 @ $19.50.

Wire.—There is no change from last week. Barb Fence Wire is scarce and the market strong. The demand continues excellent.

St. Louis.

Office of *The Iron Age*, Bank of Commerce Building, ST. LOUIS, May 23, 1892.

Pig Iron.—The past week can be recorded as the dullest in the current year, not that consumers are out of the market entirely, but from the fact that it was impossible to ship a pound of Iron into the city. The approaches to the city from the Southern furnaces are through East St. Louis, and there everything was under water with the exception of one railroad line, over which, of course, it was impossible to handle the combined business of the other roads. Agents were kept busy buying and borrowing Iron from those whose supplies enabled them to dispense with a portion of it, and the week closed with the market in a very chaotic condition. Some few sales were made, but prompt deliveries were out of the question, and so the case stands. Practically no market and prices nominally unchanged as follows, for cash, f.o.b. St. Louis.

Southern Coke, No. 1 Foundry,	$14 00 @ $14 25
Southern Coke, No. 2 Foundry,	13.25 @ 13.75
Southern Coke, No. 3 Foundry,	12 50 @ 13.00
Gray Forge	12.25 @ 12.50
Southern Charcoal, No. 1 Foundry	16 25 @ 16.75
Southern Charcoal, No. 2 Foundry	15 50 @ 16.00
Missouri Charcoal, No. 1 Foundry	14 50 @ 15.00
Missouri Charcoal, No. 2 Foundry	14.00 @ 14.25
Ohio Softeners	17.00 @ 17.25

Bar Iron.—Local trade has been fairly active, but out of town trade amounted to nothing, on account of the inability to ship material. Prices continue as last quoted. Lots from mill command 1.60¢, half extras, f.o.b. cars East St. Louis. Lots from store are quoted at from 1.65¢ to 1.70¢, according to quantity.

Barb Wire.—The movement in this commodity is restricted to small quantities for prompt shipment. Prices are not as firm as they were at the time our last report was penned and are quoted as follows: Painted from mill, $2.35; Galvanized, $2.80; less than car lots 10¢ ₱ cwt. additional.

Wire Nails.—There is no improvement to note in Wire Nails. Trade is dull and mills are offering any quantity at $1.80.

The outlook is not encouraging, and unless the demand shows decided improvement lower prices will be in order.

(By Telegraph.)

Pig Lead.—There is no business doing and practically nothing in sight. The extreme firmness of prices in the face of a market that is almost dead is commented upon and the prediction made that any slight improvement in the demand will be reflected in prices. For shipments during the next 60 days from 4.05¢ to 4.07½¢ is quoted.

Spelter.—The dullness noted last week continues and there is no prospect for any immediate change. The market is absolutely without feature either as regards price or demand. Stocks are accumulating, but not sufficiently fast to affect prices. We quote 4.65¢ @ 4.67½¢ for June and early July deliveries.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, Pittsburgh, May 24, 1892.

The extreme depression that has existed for months in the Iron and Steel trades does not show any signs of clearing away. In fact, the situation seems to grow steadily worse, at least as far as prices are concerned. Some weeks the demand shows a slight increase, but summing it up, it is very unsatisfactory and falls far short of meeting the output. During the week ending on the 14th inst. there were a good many inquiries for Iron, and a number of sales were made, one being for 10,000 tons, mention of which was made last week. For the week under review, however, there were very few inquiries and prices for both Raw Iron and Steel again show a tendency to decline still further. Well-informed authorities agree that there are no indications existing now that would warrant the statement that prices have reached bottom, and until it is pretty certain that they will not go lower buyers will continue to purchase in limited quantities, as they have been doing for some time past.

Pig Iron.—The week under review was extremely quiet, and no transactions came to the surface that involved any considerable amounts. The blast furnace shutdown movement concerning which so much has been said has materially lessened the output of Bessemer in the Mahoning and Shenango valleys and very little Iron from those places is coming into Pittsburgh. But four stacks in these two districts are running on Bessemer Pig, these being one Hall, one Neshannock, one Thomas and one Brier Hill. Pittsburgh, however, continues to produce as largely as ever, but much of it is used in the steel plants of the concerns operating the furnaces. Prices for the past week do not show much change with the exception of Foundry Irons, which are again weaker, and we have reduced quotations on both Nos. 1 and 2. We quote as follows:

Neutral Gray Forge	$12.75	@ $12.85,	cash
White and Mottled	12.50	@ 13.00,	"
All-Ore Mill	13.25	@ 13.50,	"
No. 1 Foundry	14.40	@ 14.65,	"
No. 2 Foundry	13.50	@ 13.75,	"
Bessemer Iron	14.25	@ 14.35,	"
Warm-Blast Charcoal	18.50	@ 20.00,	"
Cold-Blast Charcoal	25.00	@ 27.00,	"

While $14.25 is the open market for Bessemer Iron, this price has been shaded slightly in several instances. A small lot of Southern Mill Iron was sold here last week at private terms. This is the first Southern Iron that has come into Pittsburgh for a long time.

Ferromanganese.—A fair business is doing in domestic at prices ranging from $61.50 to $62. Foreign is held at $59.25 at seaboard.

Soft Steel Billets.—The situation is about the same as was noted last week. Buyers are impressed with the belief that by holding off their orders for a time they will be able to buy at lower prices. On the other hand, the mills here are well sold up until July 1 and absolutely decline to book orders for delivery before that date. One or two mills in the Wheeling district are also understood to be pretty well sold up to July 1, while the balance are not so well fixed. Pittsburgh continues to make large shipments of Billets to Eastern points, thus taking advantage of a low freight rate, which will be in force until July 1. From present appearances the Mahoning Valley will soon enter the ranks of Soft Steel makers, as a plant will probably be built in Youngstown before the year is out. Prices do not show much change, and we quote the market at $22.25 @ $22.75, with $22.50 as the ruling figure. One large buyer who has been trying to place an order at $22 has not yet succeeded, but claims to have had an offer at a shade less than $22.25. The order has not yet been placed.

Muck Bar.—There is no improvement whatever in the demand and, in the absence of business, prices have again declined. We quote the market at $24.50 @ $24.75, with the first named as the ruling figure.

Wire Rods.—The improvement in the market noted for several weeks past continues, and Rods for immediate shipment cannot be had at figures quoted below. The product of the mills up to July 1 and later is all under contract. We quote the market at $32 @ $32.25, f.o.b. at mills, for forward shipment.

Structural Material.—A fair business is going, but it does not begin to represent the capacity of the mills for production. There are two plants in Pittsburgh that could very well take care of all the business in the country, and it would not push them very hard to do it. The demand for Bridge Material is much better than for Building Shapes, although an improved demand for the latter is looked for in the near future. The Keystone Bridge Company are making large shipments of Bridge Material to Chicago to be used in the Alley Elevated Railroad in that city. Prices remain about the same, with the exception of Beams and Channels, on which we have made slight reductions. We quote as follows: Beams and Channels on a basis of 1.95¢ for desirable orders and 2¢ @ 2.10¢ for small lots; Angles, 1.85¢ @ 1.90¢; Universal Mill Plates, Iron, 1.80¢ @ 1.90¢; Universal Mill Plates, Steel, 1.80¢ @ 1.90¢; Tees, 2.50¢; Refined Iron Bars, 1.70¢; Steel Bars, 1.75¢.

Steel Plates.—Business is hardly as active as it was several weeks ago, and it is understood that some fairly large orders recently booked were at extremely low prices. The capacity of the mills is so great that when a good order is in the market the competition to secure it is so keen that it generally results in the buyer getting the benefit of very advantageous figures. Prices do not show much change, and we quote as follows: Fire Box, 3.50¢ @ 4¢; Flange, 2.10¢ @ 2.25¢; Shell, 2¢ @ 2.10¢; Tank, 1.75¢ @ 1.85¢.

Merchant Steel.—Trade is in a very unsatisfactory condition. It is understood here that orders have recently been booked at prices which manufacturers a few months ago would have scorned. The demand for Soft Center Steels for agricultural implements should be at its best now, but it is almost as dull as other kinds of Steel. Unless an improvement soon comes the season will have slipped by, when it cannot be looked for. We repeat quotations of lask week, as follows: Crucible Spring Steel, 3½¢ @ 4¢; Tool Steel from 6½¢ upward, according to quality, and Bessemer Machinery, Tire and Spring Steel from 2¢ up to 2.40¢, according to quality.

Steel Rails.—Prices continue at $30, f.o.b. at mills. The Edgar Thomson mill has booked considerable business during the past few weeks, made up principally of small lots. With Bessemer Pig at $14.25 and less and Rails at $30. Railmakers are in clover if they can book enough business to keep running.

Barb Wire.—The demand is as heavy as ever and mills are taxed to their utmost in order to get out business as fast as wanted. Notwithstanding the enormous output there is considerable grumbling being done by buyers who do not get their shipments promptly. Prices are unchanged and we quote as follows: $2.25 @ $2 35 for Painted, and $2.70 @ $2.75 for Galvanized, f.o.b. at factory, the lower prices named being on carload lots.

Wire and Cut Nails.—A fair demand is going for Wire Nails, but prices have shown a marked decline, and we reduce quotations accordingly. This decline in prices is attributed in part to the very low prices at which Billets are obtainable. We quote at $1.60 in carload lots and $1.65 in less quantities. A large order with fair specifications would shade the first-named price. In Cut Nails only a moderate business is going, and prices do not show any change. We quote as follows: $1.47½ @ $1.50 for carload lots, 30¢ averages, f.o.b. in Wheeling district.

Wrought-Iron Pipe.—Some of the mills are very busy running on orders booked some time ago, but as far as new business is concerned it does not come forward very freely. Competition continues to keep prices down to the lowest notch, and the advantage continues to rest with the buyer. Discounts are unchanged and are as follows: Black, 57½ %; Galvanized, 47½ %; Lap, Black, 67½ %; Galvanized, 55 %; Boiler Tubes, up to 2½ inch inclusive, 55 %; 3 inches and larger, 65 %; Casing, 55 %; Inserted Joint Casing, 50 %. Makers continue to shade these discounts considerably.

Manufactured Iron.—The situation is very unsatisfactory and competition for business is affecting prices very seriously. There is a report going here that the Amalgamated Association will endeavor to close down all the mills under their control during the first two weeks in July. The Bar Iron manufacturers in the Mahoning and Shenango valleys and other points west of Pittsburgh have finished their scale and will meet a committee of the Amalgamated Association early in June. We quote prices as follows: No. 1 Bars at 1.57½¢ @ 1.60¢, 60 days, 2 % off for cash; Bars made from Old Rails at 1.47½¢ @ 1.50¢; Steel Sheared Plates, 1.80¢ @ 1.90¢; Iron Sheared Plates at 1.75¢ @ 1.85¢; No. 24 Sheet at 2.40¢ @ 2.50¢, 60 days, 2 % off for cash. Skelp Iron, in sympathy with Bar Iron, is weaker, and we quote at 1.50¢ @ 1.55¢ for Grooved and 1.60¢ @ 1.65¢ for Sheared, 4 months, or 2 % off for cash.

Scrap Iron and Steel.—If anything, the market is in worse condition than it was last week. Prices are completely demoralized and it is difficult to say how low prices really are. In the absence of any business doing in which to base figures, we quote as follows: No. 1 Railroad Wrought Scrap, $16.25 @ $16.50 ℔ net ton; Cast Scrap, $11.75 @ $12 ℔ gross ton; Billet and Bloom Ends, $16.50 @ $16.75; Cast Iron Borings, $8.50 @ $8.75 ℔ gross ton; Mixed Country Steel, $14 ℔ gross ton; Railroad Coil Springs, $18 @ $18.25 ℔ gross ton; Leaf Springs, $19.50 @ $20.

Old Rails.—There is nothing doing in either Old Iron or Steel Rails. They are obtainable at almost any price that a

buyer would care to offer, and for this reason we omit quotations.

Detroit.

WILLIAM F. JARVIS & Co. of Detroit, Mich., report as follows under date of May 23, 1892: There has been an increased buying movement in Lake Superior Charcoal in the Eastern market, and a number of large contracts closed. The prices, while far from being satisfactory to the manufacturers, are yet no lower than have been ruling for several weeks. While there are some large consumers who are holding off, there are others, and the ranks of this class are being added to almost daily, who have made up their minds that when anything is selling at cost it is a good time to cover for their known wants. It is very seldom that buyers question the fact that Iron, and especially Lake Superior Charcoal, cannot be produced for the present selling prices, and they are, therefore, making purchases for their needs and for as far ahead as they can get sellers to make deliveries. There is also a little better demand for Ohio Coke Irons at prices about the same as have ruled for considerable time past. With an active market we quote as follows:

Lake Superior Charcoal, all numbers	$16.50 @ $17.50
Lake Superior Coke, Bessemer	16.00 @ 17.00
Lake Superior Coke Foundry, all ore	16.50 @ 17.00
Ohio Blackband (40 per cent.)	17.00 @ 17.50
Southern No. 2	15.00 @ 15.50
Southern Gray Forge	13.25 @ 13.75
Jackson County (Ohio) Silvery	17.75 @ 18.25

New York.

Office of *The Iron Age*, 96-102 Reade street, NEW YORK, May 25, 1892.

Pig Iron.—With rare exceptions, the local Pig Iron houses report an exceedingly dull week. A few negotiations are pending for round lots from large consumers, but they are slow to close contracts. In marked contrast with most of the furnace companies represented here, the Thomas Iron Company report an increased demand from their customers. Within the past few days urgent calls have been made for more rapid deliveries, indicating that stocks at the foundries are running very low and that they are melting more Iron than they had anticipated. A sale of 3000 tons of a standard Northern brand is the most important transaction which has recently transpired. The concern taking this quantity was desirous of securing much more, but the furnace company would not increase the amount. We quote Northern brands at $15.50 @ $16 for No. 1; $14 75 @ $15 for No. 2; $13.50 @ $14 for Gray Forge, tidewater. Southern Iron, same delivery. $15 @ $15.50 for No. 1; $14 @ $14.50 for No. 2 and No. 1 Soft; $13.25 @ $13.50 for No. 2 Soft; $13 for Gray Forge.

Spiegeleisen and Ferromanganese.—Business is so dull that the quotations made are wholly nominal, viz.: $23 @ $23.50 for 10 to 12 %, $26.50 @ $27 for 20 % Spiegeleisen, and $59.50 @ $60 for Ferro.

Steel Billets and Rods.—Very little trade has been done during the past week, small lots of domestic Billets having changed hands at $24.50, tidewater, and Rods at $35.

Steel Rails.—The past week has been even quieter than any of its predecessors. Inquiries of the leading mills represented in this market have failed to disclose any transactions whatever, except in small quantities of light Rails. Prices are firmly maintained, however, at $30, at mill, or $30.75, tidewater.

Manufactured Iron and Steel.—A little better demand is noted for the general line, but the movement has not been sufficiently great to characterize trade as at all active. Large transactions have taken place in Steel Cotton Ties on the basis of 2¢, delivered at Southern points. This price is stated to be below anything before known in the Cotton Tie trade. The demand for building material keeps up with expectations. A large warehouse at Greene street and Washington Place, to cost $350,000, and requiring 1000 tons of Beams, was put under contract. A factory on Mercer street, to cost $50,000 and to take 250 tons of Beams, was also closed. More large buildings are on the boards and will be in the market very shortly. Nominal prices, subject to concessions on good specifications, are as follows: Beams, 2.25¢ @ 2 45¢ for small lots and 2.10¢ @ 2 20¢ for round lots; Angles, 1.9¢ @ 2¢; Sheared Plates, 1.85¢ @ 2.25¢; Tees, 2.30¢ @ 2.75¢; Channels, 2.25¢ @ 2.50¢, on dock. Car Truck Channels, 2¢ @ 2.10¢. Steel Plates are 1.85¢ @ 1.95¢ for Tank; 2.05¢ @ 2.25¢ for Shell; 2.35¢ @ 2.65¢ for Flange; 2.55¢ @ 2.75¢ for Marine, and 3¢ @ 3.25¢ for Fire Box, on dock. Bars are 1.7¢ @ 1.9¢, on dock. Scrap Axles are quotable at 2¢ @ 2.10¢, delivered. Steel Axles, 2¢ @ 2.1¢, and Links and Pins, 2.05¢ @ 2.20¢; Steel Hoops, 1.9¢ @ 2¢, delivered.

Merchant Steel.—Nothing new has developed under this head, and there is no tendency to higher prices as yet. Quotations are continued—namely: Hot-Rolled Shafting, 1.90¢ @ 2¢; Machinery, 1.90¢ @ 2.10¢; Tire, 2¢ @ 2.25¢; Toe Calk, 2.20¢ @ 2.35¢, and Tool Steel, 5½¢ @ 6½¢, delivered.

Track Material.—Inquiries for Fastenings are very light, and the competition for such business as is now coming forward is very keen. Spikes are quoted at 2¢ @ 2.05¢; Fish Plates, angle or plain, 1.60¢ @ 1.70¢; Track Bolts, square nuts, 2.65¢ @ 2.75¢, and hexagon nuts, 2.80¢ @ 2.85¢.

Old Material.—A sale of 500 tons of Old Rails is reported at $19.50, delivered at buyers' mill, with $2 25 freight. Old Steel Rails have been sold at $16, delivered at consumers' mill. Scrap Iron is exceedingly dull, and is nominally quoted at $16.50 on lighter for No. 1 Wrought.

The New York headquarters of the Wainwright Mfg. Company of Massachusetts are now in the Electrical Exchange Building, 136 Liberty street, Rooms 127 and 128. B. F. Aspinwall, who has represented their business in this city before, will continue his connection with the company as manager of the office.

Metal Market.

Copper.—There have been no new developments during the past week. A very fair amount of material continues to be moved off in delivery of old contracts, enough apparently to prevent any burdensome accumulation of supplies; but new orders seem to be chiefly for moderate quantities required to meet immediate or near future wants, and not remarkably numerous. However, current business, such as it is, proves to be sufficient to keep the market steady, despite delay in perfecting the proposed international agreement to restrict production and lower prices in Europe due to the uncertainties in this connection. The business passing is chiefly at 12¢ @ 12½¢ for Lake Superior product, and 11½¢ @ 11⅝¢ for ordinary casting brands.

Pig Tin.—Speculative operations have been on a large scale, involving more tons than were traded in during the preceding week, and the successful manner in which the "bull" movement has been conducted appears to have led to freer purchases by jobbers and consumers as well, making, upon the whole, a livelier market than is usually experienced at this season of the year. In the turnover there has been more or less selling of distant futures, against purchases of May and June delivery, but the recognized "bull" leaders appear to come out the best on such deals thus far and are bolder, if anything, in their bids on deliveries running during the balance of the year, despite the fact that futures are still at a discount in London. For prompt and remainder of May deliveries up to 21.40¢ has been paid. June delivery sold at 21.45¢ and 10 tons per month for delivery brought 21.60¢. On the latter there has been an advance of 0.60¢ during the week and spot value has gone nearly if not quite as much higher.

Lead.—Some few sales were made early in the week at 4.22½¢, but advices of a slightly better turn in the London market, along with improvement in the home demand, have since developed firmer tone. The presence of more inquiries brings out more prominently the fact that stocks here are light and that smelters are in a position to profit by a little more urgency in consumptive requirements, since foreign Lead cannot be imported except at about 20¢ ₱ 100 lb advance on present cost of domestic. At the moment 4½¢ is apparently inside price for Common Western; 4.27½¢ @ 4.30¢ is generally asked.

Spelter.—Western brands are very firmly held at 4.80¢ @ 4.85¢ in carload and larger lots. Floods in several mines have curtailed the supply, momentarily at least, but aside from this circumstance the market is helped by new export inquiries for certain brands at prices on a parity with 4½¢, New York delivery. Eastern consumers buy in a very indifferent manner, however, and the business passing in this quarter is of merely routine character.

Antimony.—Apart from the usual movement of ordinary quantities, there has been little doing, and prices show no radical change. Current quotations are 11¾¢ @ 11½¢ for Hallett's, 12¢ @ 12½¢ for LX, 12½¢ for Crown and 14½¢ @ 14¾¢ for Cookson's, as to size of lot.

Tin Plate.—The heavy advance in cost of Pig Tin prompts more reserved offering and a general demand for higher prices in the foreign market for nearly all descriptions of Plates. To that extent future deliveries are firmer, but no positive advance has yet been paid. With free arrivals and moderate demand spot goods are somewhat irregular, however, and some business has been done at rates below those generally asked. We quote as follows for full weights: Coke Tins—Penlan grade, IC, 14 x 20, $5.25; J. B. grade, do., $5.35; Bessemer do., $5.30; light weights, 100 lb, 10¢ less; 95 lb, 20¢ less; 90 lb, 30¢ less than full weight; Siemens Steel, $5.37½. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.60 @ $5.65; Siemens Steel, IC basis, $5.75 @ $5.80; IX basis, $6.80. IC Charcoals—Melyn grade, ½ X, $6.40; for each additional X add $1.50; Allaway grade, $5.75; Grange grade, $5.85; for each additional X add $1.20, Charcoal Ternes—Worcester, 14 x 20, $5 75; do., 20 x 28, $11.30; M. F., 14 x 20, $7.37½; do., 20 x 28, $14.75; Dean, 14 x 20, $5.45; do., 20 x 28, scarce; D. R. D. grade, 14 x 20, $5.35; do., 20 x 28, $10.30; Mansel, 14 x 20, scarce; do., 20 x 28, $10 45; Alyn, 14 x 20, $5.45; do., 20 x 28, $10.60; Dyffryn, 14 x 20, $5.65; do., 20 x 28, $10.90. Wasters—S. T. P. grade, 14 x 20, scarce; do., 20 x 28, $10; Abercarne grade, 14 x 20, scarce; do., 20 x 28, $9.80.

Financial.

Another week of destructive floods and storms in the South and West has affected all kinds of business by interrupting traffic and transportation and exciting fears of a shortage in the crops The six States from which our surplus grain product is chiefly derived have all been storm swept; but satisfaction arises from the reflection that it is not too late to plant large crops of corn. Advices are received that in the southern portion of the wheat belt winter wheat is already heading out, while in the spring wheat section farm work has been seriously delayed. The effect in Eastern markets was to advance prices; but later, on reports of better weather, there was a decided breaking down in the absence of demand. In flour exporters took hold freely, at a concession, foreign markets being generally lower. India's wheat shipments last week were the largest ever known for a corresponding period, reaching 150,000 quarters to the United Kingdom and 125,000 quarters to the Continent. Spot cotton was $\frac{1}{32}$¢ ₱ lb. higher, it being evident that a wide expanse of lands under culture is inundated; at the same time, the fact is considered that the residuum from an overflow makes an excellent fertilizer. Corn, too, averaged 2¢ @ 3¼¢ higher for future delivery. Provisions were weak and lower on large receipts, but liberal shipments averted a break. The distribution of general merchandise has been somewhat restricted by unfavorable transportation .

The stock market was irregular and lower, despite purchases on European account, by reason of continuous reports from the West and South respecting the damage by floods. Railroads were so much obstructed as to stop transportation in various directions, and crops on the bottom lands were destroyed. Erie was freely sold on a report that there would be no dividend on the preferred stock; Northern Pacific preferred fell in anticipation of the passing of the dividend, but subsequently recovered; Atchison, Topeka and Sante Fé declined on a report that a second mortgage for $100,000,000 would be issued in exchange for the income bonds, and to provide for betterments; the grangers, and especially St. Paul, Rock Island and Chicago, Burlington and Quincy, fell on flood news, and the whole market was unsettled. On Saturday one feature was an advance in Manhattan to 133, and another was good buying of National Cordage common. On Monday the rally begun on Saturday was continued, partly due to the market being overruled. Better weather in the grain regions helped the upward movement. The scheme for the isssue of second mortgage Atchison stock and bonds appeared to be well received. At a meeting of the Richmond Terminal stockholders General Thomas reported for the committee a scheme for a new organization.

United States bonds were firm at the following quotations:

U. S. 4½s, 1891, extended	100
U. S. 4s, 1907, registered	117¼
U. S. 4s, 1907, coupon	117¼
U. S. currency 6s.	109

The money market was easier and sterling exchange was heavy at lower quotations, on account of the amount of bonds being taken abroad. The situation may be inferred from the fact that nearly the entire issue of Illinois Central Railroad bonds recently offered in this market was taken abroad and that the Pittsburgh, Cincinnati, Chicago and St. Louis Railway bonds also are being subscribed for liberally. Commercial paper is taken readily at the lowest rates. The bank statement showed an increase of $4,723,600 in cash and of $3,783,850 in surplus reserve, making this item $19,555,975.

The foreign commerce of the United States continues to show a favorable balance of trade. For the month of April the total of the imports was $77,962,693, and the total of the exports $85,811,754, leaving the balance of trade $7,849,061 in favor of this country. If the comparison is exclusive of gold and silver, the exchange was nearly even, the imports of merchandise being $76,293,311 and the exports $76.117,701, leaving a balance of $175,610 in favor of the former. For two months the total exports was $952,568,365 and the imports $751,581,938, showing a balance of trade for the period named of over $100,000,000 above the same period of the preceding year. Included in the exports for ten months were $22,086,278 in domestic gold, $6,525,324 in foreign gold, $15,053,349 in domestic silver and $13,054,976 in foreign silver.

The Philadelphia *Ledger's* Washington correspondent sends a statement of Secretary Foster's views in reply to the charge that the present Administration favors the exclusive use of gold for currency. The Secretary states that the Administration believes that gold alone is too narrow a basis to conduct the business of the world upon, and that it is the duty of all in authority to preserve the use of silver for money. To accomplish this the co-operation of the leading commercial nations is necessary. Ever since the present Administration came into power it has had its agents in Europe investigating public sentiment, and through these agents is led to believe that a condition of public sentiment exists which will enable us to make substantial progress. He concludes by saying: "I believe a condition of public sentiment exists in Europe now that will enable us to achieve substantial progress, if not the full realization of all the desires we have upon the question. The desire of this Government is for an international agreement upon a fixed ratio and the opening of the mints of all to silver as they are now open to gold."

Coal Market.

The Anthracite Coal trade is gradually adjusting itself to the new conditions imposed by the combine, but a lack of confidence is still manifest on the part of consumers, who show no eagerness to buy. In other words, the market refuses to boom despite the influences brought to bear upon it by the leading operators, and remains in a lifeless condition. Talk of advancing prices, together with a positive restriction, are without avail. Although the combine adhere rigidly to prices, Coal can be bought 15¢ @ 25¢ below the schedule from outside parties, among whom are several individual operators of some importance, besides the Pennsylvania Railroad Company and the Pennsylvania Coal Company whose headquarters are at Newburg. Then there is some combine Coal still afloat which was on the books prior to the last advance and which can be had a shade below the schedule.

Production for week, 815,743 tons; for the year, 13,588,726 tons, an increase of 966 tons, Reading production for the week, 235,000 tons. Pennsylvania Coal tonnage for week, 281,165 tons; total Coal and Coke tonnage for year over the the Pennsylvania road, 7,095,595 tons, against 6,324,138 tons for same time last year. The expected requirements for June are 3,000,000 tons. The Reading Company have ordered the starting up of three more of their most productive colleries. The Pottsville *Journal* says: "The recent reduction in freight rates to iron manufacturers has increased the demand for manufacturing sizes, and is considered by the trade at large as an indication of President McLeod's intention to protect the manufacturing interests along the Reading lines, and place them in position to meet competition from other quarters."

The stock of Coal was reduced during April over 100,000 tons.

The death of Theodore S. Mize, Eastern representative of the Black Diamond Coal Company, after a brief illness, is deeply felt in the trade.

The Bituminous Coal trade is quiet and uneventful at steady prices.

Louisville.

LOUISVILLE, KY., May 23, 1892.

Consumers are following the same line of action that has been pursued during the last few months, only buying what is actually needed, save where concessions are made and Iron offered at tempting figures. Even this manner of purchasing is not indulged in to any great extent. While prices are not strong, leading furnaces are not offering Iron at lower concessions than $9, at furnace, for Gray Forge, and are emphatic in taking the position that this is the last notch even if consumption should fall off, preferring to hold the Iron until a better price can be obtained or else go out of blast. Stocks in the South have somewhat decreased, which offers slight encouragement, but it is thought before any great change can take place the furnaces situated at unfavorable points will have to go out of blast. At the present moment they are proving disturbing factors, preventing the market from advancing to a point where furnaces favorably situated can make money, and are losing heavily themselves. The demand for Car-Wheel Irons continues quiet, prices remaining the same. We quote for cash, cars, Louisville:

Southern Coke, No. 1 Foundry	$13.75 @ $14.25
Southern Coke, No. 2 Foundry	12.75 @ 13.25
Southern Coke, No. 3 Foundry	12.00 @ 12.50
Southern Coke, Gray Forge	11.50 @ 12.00
Southern Charcoal, No. 1 Foundry	15.75 @ 16.75
Southern Car Wheel, standard brands	18.00 @ 19.00

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, May 25, 1892.

Stocks of Iron in warrant stores have been further reduced. The quantity of Scotch is now 456,000 tons, against 463,000 tons a week ago, and that of Cleveland has fallen off from 88,000 to 77,000 tons. Scotch warrant prices have dropped, in the face of the statistical exhibit, to 40/7½; but Cleveland has improved to 39/2 and Hematites to 49/11. Hematite warrants for prompt delivery are scarce and makers ask 1/6 above warrant prices, although experiencing a slow market. It is reported that the Durham miners are willing to resume work at 10 per cent. reduction in wages and the owners have declined to entertain the proposition.

Copper has been irregular, with active speculation and higher prices early in the week, also good purchases for consumption, prompted chiefly by reports that agreement in the matter of restricting production had been arrived at. Absence of confirmation of these reports and unfavorable rumors connected with the same led to realizations and a decline in prices. The latest proposition is for 5 per cent. reduction by English producers and aggregate corresponding reduction in American output on a sliding scale.

There is slight improvement in the tone of the market for Tin Plate. This is due to scarcity of Bars and dearness of Pig Tin more than to demand. Fair orders reported for Bessemer squares at 12/3 and Siemens at 12/6 at Swansea, chiefly for Russian account. Americans unwilling to buy at 1½d per box advance.

Special parcels of Old Iron Rails have been sold at good prices, but market for Old Material continues very quiet.

Scotch Pig Iron.—No change in character of demand for makers' Iron, and little movement in prices.

No. 1 Coltness,	f.o.b. Glasgow		53/6
No. 1 Summerlee,	"	"	52/
No. 1 Gartsherrie,	"	"	50 6
No. 1 Langloan,	"	"	51 6
No. 1 Carnbroe,	"	"	44
No. 1 Shotts	"	at Leith	51/
No. 1 Glengarnock,	"	Ardrossan	50 6
No. 1 Dalmellington,	"	"	47 6
No. 1 Eglinton,	"	"	47/

Steamer freights, Glasgow to New York, 1/: Liverpool to New York, 7/6.

Cleveland Pig.—Business merely fair, but makers' prices remain firm at 39/6 for No.3, f.o.b. Middlesborough.

Bessemer Pig. — Demand continues rather slow, but prices are held firmly at 50/6 for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Spiegeleisen.—No change in this line. Demand continues slow. English 20 % quoted at 77/6, f.o.b. shipping port.

Steel Rails.—Market without change, business moderate and at former prices. Heavy sections quoted at £4. 2/6, f.o.b. shipping port.

Steel Blooms.—There is little doing and old prices are asked. Makers quote £4 for 7 x 7, f.o.b. shipping point.

Steel Billets.—Movement continues slow, but makers hold at old prices. Bessemer, 2½ x 2½ inches, quoted at £4. 5/, f.o.b. shipping point.

Steel Slabs.—The market remains quiet and wholly unchanged. Bessemer quoted at £4. 5/, f.o.b. at shipping point.

Old Iron Rails.—Demand continues slow. Holders ask former prices and offer indifferently. Tees quoted at £2. 17/6 and Double Heads at £3, f.o.b.

Scrap Iron.—There is merely a routine trade, and that at old prices. Heavy Wrought Iron quoted at £2. 10/ @ £2. 12/6, f.o.b.

Crop Ends.—Market very quiet and without change. Bessemer quoted at £2. 12/6 @ £2. 15/, f.o.b.

Manufactured Iron.—Business continues rather slow and prices remain without decided change. We quote, f.o.b. Liverpool:

	£	s.	d.		£	s.	d.
Staff. Ordinary Marked Bars	8	10	0	@			
" Common "	6	5	0	@	6	7	6
Staff. Bl'k Sheet, singles	7	5	0	@			
Welsh Bars (f.o.b. Wales)	5	10	0	@			

Tin Plate.—Improved demand has stiffened the market for Bessemer Cokes and Ternes. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	13/9 @ 14/3
IC Bessemer Steel, Coke finish	12/6 @ 12/9
IC Siemens " " "	12/6 @ 12/9
IC Coke, B. V. grade 14 x 20	12/3 @
Charcoal Terne, Dean grade	12/ @ 12/3

Pig Tin.—Market strong at the advance and moderately active. Straits quoted at £97. 17/6, spot, and £97. 7/6 for three months.

Copper. — A better business to-day and the market firmer. Merchant Bars quoted at £46. 17/6, spot, and £47. 7/6, three months' futures. Best selected, £50.

Lead. — Market rather quiet. Prices steady at £10. 10/ for Soft Spanish.

Spelter.—Demand has been slow and the market is easier at £22. 7/6 for ordinary Silesian.

Imports.

Hardware, Machinery, &c.

Barbour Bros. & Co., Mach'y, cs., 6
Baldwin Bros. & Co., Gun Barrels, cs., 15
Boker, Hermann & Co., Arms, cs., 34
Bonk, W. H., Mach'y, cse., 1
Botany Worsted Mills, Mach'y, cs., 28
Clark, Geo. A. & Bro., Mach'y, cs., 37
Curley, J. & Brother, Cutlery, cs., 2
Downing, R. F. & Co., Mach'y, pgs., 59; do., cs., 37; Hardware, pgs., 4
Falk, J. E., Mach'y, cs., 16
Folsom, H. & D., Arms, cs., 2
Fleishmann & Co., Mach'y, pgs., 9
Jordan, A. J., Hardware, cs., 5
Knauth, Nachod & Co., Mach'y, cs., 5
Knowles & Co., Mach'y, cks., 33
Lau, J. H. & Co., Cutlery, cs., 4
Meiter G. & Co., Mach'y, pgs. 13
Murphy, Alex & Co., Iron Buckles, cs., 40
Pilditch, F. S., Hardware, cs., 4
Pim, Forwood & Co., Nails, kegs, 22
Squires, Henry C., Arms, cs., 3
Tryon, E. K. Jr. & Co., Arms, cs., 20
Werlemann, H., Arms, cs., 25
Wiebusch & Hilger, Arms, cs., 10
Order.—Mach'y, cs., 2

The Falls Hollow Stay Bolt Company of Cuyahoga Falls, Ohio, have received from the Laboratory of Physical Tests, Washington University, St. Louis, the following report of a test recently made of their hollow stay bolt iron:

Size of reduced or tested section, 0.895 diameter and 10½ inches long.	
Inside diameter, 5/16 inch hole at center.	
Area in square inches	0.601
Broke at (in pounds)	29,600
Breaking strength per square inch in pounds	49,200
Limit of elasticity in pounds	17,000
Limit of elasticity in pounds per square inch	28,300
Elongation of reduced section in 5 inches	1.70
Per cent. of elongation	34.0
Area of reduced section	0.30
Per cent. of reduction	50

Prof. J. B. Johnson says in his report on the above test:

"This is a remarkably fine specimen of wrought iron for stay bolt purposes. Its elongation, 34 per cent., is the greatest I have ever found for wrought iron, and this is of the utmost importance in stay bolt iron. The fracture shows a pure, fibrous, unlaminated and uncrystalline structure."

At the annual meeting of stockholders of Columbus and Hocking Coal and Iron Company, held at Columbus, Ohio, on the 19th inst., the following directors were elected for the ensuing year: J. O Moss, Sandusky; M. W. Tyler, J. N. Knap, M. Griffin Jennings, S. Cox, New York; R. H. Johnson, T. Longstreth, J. H. Collins, F. W. Merrick, Columbus. At a subsequent meeting J. O. Moss was elected president, A. H. Johnson vice president and general manager, W. J. Reddington treasurer, S. A. McMonigal secretary and auditor, J. J. Jackson assistant secretary, and F. W. Merrick attorney.

In the early part of this month the tinplate plant of the Pittsburgh Tin Plate Works, at Kensington, Pa., was destroyed by fire. Contracts have been already let for the rebuilding of the works on a much larger scale than before the fire, and the firm will be in the market with a high quality of both bright and roofing plates about July 15 next. The Shultz Bridge Company of Pittsburgh, who are now erecting the buildings for the Chambers Glass Company at Kensington, Pa., have also received the contract for the erection of the new buildings to be put up by the Pittsburgh Tin Plate Works.

The Stone Workers' Strike.

The stone workers' strike presents some of the phases of the labor problem in a stronger light than ever before. A remote trouble, affecting the foundations of trade through numerous branches, is magnified by "sympathy" until the public interests at large are seriously involved. The New York *Bulletin* sensibly remarks: "If sympathetic strikes are to put a stop to stonework and to all the industries dependent upon it because of a dispute in some New England quarries, there is no limit to the extent to which the work of the industrial world may be interrupted, and the cost and consequences of such a mode of warfare must be reckoned by the workers whose interests are most directly involved. The great strike comes at an unfortunate time and under unfavorable circumstances so far as its prospects of success are concerned. The quarry owners declare that they can wait indefinitely and will in the long run lose nothing by standing out against the demands of the stone cutters. The stone cutters' only hope of forcing them to terms is by causing so widespread a disturbance of other industries that great pressure will be brought upon the quarrymen to yield so that work may be resumed. But the force of public sentiment created in this way will be directed chiefly against those who cause the trouble, and will exercise as strong an influence against the success of the strike as in its favor." It becomes a practical question how far the interests of a widespread community may be sacrificed in a cause respecting which it can have little knowledge, and in which it has no immediate concern.

The Baldwin Locomotive Works of Philadelphia have within the last two weeks booked a large number of orders for locomotives. The Lehigh Valley Company has ordered 28 engines, of which two are of the Vauclain compound pattern. The Reading Company has ordered four of the compound flyers to be used between Philadelphia and New York.

The present trade-mark law is so defective and ineffective that the draft of an entirely new law is being prepared by the New York Board of Trade and Transportation to be substituted for it. The existing act has special reference to trademarks used in foreign commerce, whereas those used in interstate commerce are far more important. Since there is no provision for the registry of trade-marks used in interstate commerce there can be no substantial proof of priority of use and ownership in cases of infringement. A second objection to the present law is that even in cases of registration such registration is only declared to be *prima facie* evidence of ownership. This is of no practical value, since in cases of contest it does not prevent litigation, with its attendant delay and expense.

Ample protection against loss of life by fire has at last been given to New York City. The provisions of the new law just signed by the Governor are stringent and far reaching. Every factory, tenement, hotel, theater, store, asylum, church, hospital, school or other building where large numbers of people are likely to congregate is required to be provided with hose, extinguishers, axes and such other means of fighting fire as the Fire Commissioners may direct. Electrical danger signals must be provided, and must be kept in good order by frequent inspection by members of the uniformed force. Fireproof buildings alone are exempt.

HARDWARE.

Condition of Trade.

REPORTS INDICATE that the aggregate of this month's business will probably compare well with that of usual years, and with the advance of the season there is a general activity that should meet the reasonable expectations of the trade. The heavy and long-continued rains and the floods in the West and Southwest have the effect of curtailing business considerably, and the condition of things in the cotton States has prevented trade from reaching its usual volume. With these exceptions the country at large is in excellent condition and a steady business is doing in nearly all jobbing points. Manufacturers are for the most part well occupied on orders and have little reason for complaint, although comparatively few of them are able to market goods up to their capacity for production. This is, of course, to be expected, inasmuch as their policy for years has been to add constantly to their manufacturing facilities, and with improved processes of manufacture they are in a position to turn out larger quantities of goods. The tone of the market is without especial change since our last report. Prices as a rule are fairly steady, though generally low and somewhat irregular in certain staple lines that lie near the raw material. Collections are fair.

We are indebted to Farwell, Ozmun, Kirk & Co., St. Paul, for the following report of the condition of things in their market, especial reference being made to the rain which has been so prevalent:

There is little just now to report on our market, as trade is running smoothly, the only notable fact in connection with it being the unusually wet weather that has prevailed throughout the Northwest thus far during May. It is many years since such a cool and wet May has been experienced in the Northwest, and it has been general. Even in the Northwest, instead of the tribe of "rainmakers" being in demand, the people are beginning to wonder whether a "rain preventing" machine cannot be invented. Farmers are greatly delayed in getting in their crops, and country roads are in such a condition as to prevent farmers from marketing their grain and from buying goods. The volume of trade is considerably decreased by this condition of things, and the showing for the month in sales of jobbers will be a good deal less favorable than it would have been with favorable weather. As to the extent of permanent damage that will ensue, it is difficult to estimate. The probability now is, however, that there will be a somewhat less acreage sown to small grain this season than has been expected. Still, seeding can ordinarily be done here till the early part of June, and a fair crop may be expected unless unusually early frosts come on in the fall. A few days of dry weather and sunshine make a wonderful difference in this latitude.

We take pleasure also in giving the following careful review of the condition of things in North Dakota, which comes from a well known house in the Red River Valley:

If the weather continues as favorable as it has been for the last two days it will likely be pretty quiet in business until farmers can finish their seeding. The past two days have been all that we could desire so far as drying up the ground is concerned, and any wheat that has been sown is in many places up and looking well. While the season is late, yet we feel hopeful for whatever amount farmers will be able to sow during this month. The acreage will not be as large by 30 per cent. at least as it was last year, although the writer is inclined to think that it will be a blessing in disguise, as it will enable farmers to do much more summer fallowing than otherwise they would, and they then will be in good shape to take care of their fall's work, and also be prepared next spring to put in their crop to its full capacity. Also they can get their work well in hand this year, as so many of them have part of last year's work to do in the way of threshing and other necessary work. A less acreage means a less expense to take care of the coming fall, and will enable a large part of our smaller farmers to keep within their own help and thus save a large expense which had to be incurred the past season in an almost fruitless effort in many cases caring for their crop.

Chicago.

(By Telegraph.)

The demand for all lines of goods has fallen off very materially, which is attributed to the conditions of the country caused by the extraordinary fall of water in the last two weeks. Jobbers are consoling themselves with the bright reports that their traveling men send in instead of orders, and believe that the prospects indicate a renewal of their trade before the close of the month. Business for the first ten days of May was exceedingly satisfactory, and if trade had not been shut off by the unusual conditions of the weather it is thought they would have had the best May that jobbers have had for many years. The country is gradually assuming its normal condition, and the opinion prevails that business that has been deferred will be largely augmented by material necessary to repair the damage done by the floods. Money continues easy and collections fair.

St. Louis.

(By Telegraph.)

The present week opened up in good shape. The weather has improved considerably; dull, rainy days have given place to bright, sunny ones, and jobbers and retailers alike are feeling the influence of the change. A comparison of the business for the present year to date shows a very encouraging increase over the same period one year since, and the outlook is encouraging for a continuation of this condition of affairs. Barb Wire is dull, but steady; Wire Nails are weak, absolutely no trade doing. The condition of the country roads precludes a large movement, but the season is now so far advanced that roads will shortly be in condition for travel. Collections are only moderately fair.

Notes on Prices.

Wire Nails.—The condition of things described in last week's report still continues. The low figures on Wire Nails then named are still obtainable, and the market is characterized by a good deal of irregularity and demoralization. The competition between some of the mills is decidedly active. Quotations are on a basis of $1.55 as the manufacturers' price on carload lots at factory, but this figure has been and is still slightly shaded. It is not unlikely that a large order could be placed at $1.50. Some mills are refusing to meet this figure, preferring to pass orders rather than accept them at what they consider an unprofitable price. Small lots from store in the New York markets are regularly sold at $1.85.

Chicago, by Telegraph.—Manufacturers appear to be eager to place orders, regardless of the fact that the demand from jobbers is lighter than it was several weeks ago. It is quite certain, however, that prices made last week will not be shaded in the effort to obtain orders, and it is doubtful whether the same sellers would duplicate orders at that price. The cutting of prices right and left from personal motives has resulted in so thoroughly demoralizing the market that it is difficult to quote a price that would be uniform for the entire trade. The policy of makers indulging in this rivalry is roundly denounced by jobbers and dealers, notwithstanding the fact that they profit by the sacrifice made by the manufacturers. A lot of 50,000 kegs placed in the hands of one jobber at a very low price would be sufficient to control the market for many months under whatever improved conditions might occur. Although the manufacturer only accepted one-fifth of this amount, it would not be a surprise to hear that other manufacturers are unwilling to be under-

sold, and make the same price out of pique. Should this course be pursued to the extremity jobbers could obtain sufficient stock to control this market the entire summer at a loss on all the Nails that could be produced by manufacturers during the next six months. As a result of these low sales jobbers are now quoting $1.60 rates in carload lots from store, and $1.65 rates in small lots. Thus an advantage is placed in the hands of one or two shops to command the trade, and those who bought their stocks at a fair margin price must suffer a loss on their Nails or permit their customers to deal with their competitors. Further than this, it is likely to keep prices irregular in a wholesale way and inaugurate a scale of prices on all retail trade throughout the country that cannot prevail when fair margins of profit are allowed for making and marketing them.

Cut Nails.—There has been little change in the Cut Nail market during the past week. Prices in the West are somewhat uneven and the effect of the low prices prevailing on Wire Nails is felt. Some of the mills are closed down, and for a time at least out of the market, and others have apparently only broken assortments, which they are not making any special efforts to complete. For carload lots of Steel Nails at Western mills $1.45 to $1.47½ on a 30-cent average represents current prices. In the East the situation is without important change. A meeting of the manufacturers was held yesterday at Philadelphia at which the former understanding was renewed. The quotations are on a basis of $1.55 at mill for Steel Nails, freight being equalized with competing points. Small lots from store in New York are held at $1.75.

Chicago by Telegraph.—There is little change in the situation. With a moderate demand quotations remain as before. Carload lots Chicago delivery, $1.60 to $1.65.

Barb Wire.—The manufacturers are quite generally fully occupied on orders and securing some new business. Prices are steady on a basis of $2.65 for round lots of Four-Point Galvanized at mill. Small lots from store in New York are held at $3.10 and carload lots at $3.

Chicago, by Telegraph.—There is no change in the general condition of business. Manufacturers are still busy, but are receiving many new orders. By the time the demand again opens up they will have caught up on back orders and be prepared to make prompt shipments. Prices continue firm and quoted at $2.30 for Painted and $2.80 for Galvanized, in carload lots. Jobbers expect an increase in the demand for repair work within the next 30 days, which they are prepared to meet from stock at former prices.

Carriage Bolts.—At a meeting of the associated manufacturers of Common Carriage Bolts held last week a reduction of 5 per cent. was made in the price, the discount now being 75 and 10 and 5 per cent. with an additional 2 per cent. for cash. No change was made in the rebates.

Bright Wire Goods.—The market in Bright Wire Goods is at present much more regular than usual, and quotations are well maintained.

Cordage.—There has been no important change in the Cordage situation since last week. The quotations of the National Cordage Company and their competitors remain as before, but they are shaded slightly under the impression of attractive orders or close buying. The trade are regarding with some interest the question as to the feasibility of buying imported Cordage, which at the present prices can be purchased slightly under ruling rates in this market. Buyers, however, are unwilling to purchase freely, recognizing the probability of a reduction in price by the National Cordage Company if the trade should begin to handle foreign Cordage in any considerable quantities. The large profit which the Cordage manufacturers are making at present relatively high prices would enable them to make a considerable concession and still retain a handsome margin of profit.

Silver-Plated Ware.—In connection with their pocket price-list, to which we called attention in our last issue, the William Rogers Mfg. Company, Hartford, Conn., send out the following discount sheet-terms, 4 months, or 5 per cent. discount for cash in 30 days:

	Per Cent.
Flat Ware	40 & 15 & 5
Rogers Sterling Metal	50 & 10
Rogers Silver Metal	50 & 10
Rogers German Silver	60
Replating	50
Table Cutlery, Fruit Knives, Nut Nut Picks, Cracks, &c.	50
Pie Eaters, Pie Servers, Cheese Scoop, Pickle Fork	40 & 15 & 5
Cases	50
Cleaning preparations	50

Universal Trucks.—The Thompson Mfg. Company, Elkhart, Ind., have changed the list price of their Universal Trucks to $8.00 per pair. This price is subject to a discount of 25 per cent.

Glass.—The decision reached at the meeting of the Glass manufacturers held May 12, not to close the factories until June 30, has, to a certain extent, affected the market unfavorably. When every one supposed that no Glass would be made after May 30 trade was stimulated and prices were somewhat firmer. For the past week, however, business has fallen off to a considerable degree, and jobbers are complaining more than ever of the dullness. Glass is sold in small lots as low as 80 and 10 and 5 per cent. discount by manufacturers' agents, while it is understood that Pittsburgh factories would not refuse small orders at 80 and 20 and 5 per cent. discount. There is no change in the price of French Glass, the price remaining firm at 80 and 5 per cent. discount. Quotations remain unchanged upon the following basis: American Window Glass, 1000-box lots or more, 80, 10 and 5 per cent. discount; carloads, 80 and 10 per cent. discount; less than carloads, 80 and 5 per cent. discount; French Window Glass, 80 and 5 per cent. discount; American Plate is held at a discount of 50, 10 and 5 per cent., and imported Plate at a discount of 60 per cent.

Display of Sporting Goods.

SOME OF OUR READERS, while recognizing the desirability of a good display of Guns, Fishing Tackle and Athletic Goods generally, and who have achieved a good measure of success in their arrangement, admit the difficulty of explaining their methods and of laying down any principles which would be of advantage to other Hardwaremen. Viewing the matter from this point, a well informed Hardwaremen of Tennessee writes:

We have been very successful in dressing our windows with Sporting Goods, but it is as impossible to explain how it was done as it would be to teach a man by letter how to dress well. One must have a knack for dressing the window.

A Hardware house in Michigan, however, venture the following advices in regard to their methods:

In the line of Sporting Goods we keep generally Guns, Revolvers and Fishing Tackle. We have a flat upright showcase for Guns and a square upright showcase with glass on all sides and glass shelves for Fishing Tackle. Revolvers we keep in showcase with Cutlery. Ammunition of all kinds we keep in boxes and drawers and it takes up lots of room. We are waiting anxiously for further suggestions through your valuable paper.

Alluding to the same subject and emphasizing the advantages of frequent change, a Kansas Hardwareman writes:

Our experience is that any way that will attract the attention of the customer is good and our practice has been to change and rearrange our samples—in fact, all classes of goods—every little while, and we notice that every time we make a change it directs attention to our goods. We have no particular method that we follow, but simply try to get the goods in some different shape that will in our judgment show them off to the best advantage.

Steel Sash Ribbon.

THE GARDNER SASH BALANCE COMPANY, Chicago, have introduced a new method of handling their Steel Sash Ribbons. Instead of selling the Ribbon exclusively on reels they put it up in pasteboard boxes containing 100 and 200 feet, which are just the depth of the size of Ribbon they contain. A slot is cut in the rim of the box, through which one end of the coil extends. The lid is permanently fastened on the box, which permits the ribbon to be drawn out through the slot and yet prevents the coil inside from becomming undone or tangled. Mechanics will readily appreciate this device in using it, and the convenience in carrying and hand'ing a package so small and compact will make it much more desirable and salable. Boxes containing 100 feet of the largest size, ½ inch in width, weigh only 4 pounds, and the smallest size, ⅜ inch in width, less than 2 pounds. This system of packing also enables the dealer to keep his stock in better shape, close at hand, and saves measuring, recoiling and wrapping. In addition to packing it in boxes as described, they will continue to supply the trade in bulk on wood reels containing from 500 to 1500 pounds when it is desired. These Reels of Ribbon are a great convenience to the dealer in serving customers who are in want of 25 or 50 feet, as it is deemed inadvisable to break the 100 feet lengths in pasteboard boxes.

Production of Nails.

THE ANNUAL statistical report of the American Iron and Steel Association, giving statistics of the iron trade for 1891, has just been published, and contains detailed and valuable information in regard to the production of Cut Nails and of Wire Nails. It is thus shown that the total production of Cut Nails in 1891 was 5,002,176 kegs, against 5,640,946 kegs in 1890, a decrease of 638,770 kegs, or 11 per cent. Attention is also called to the fact that there has been a steady decline in the production of Cut Nails since 1886, in which year the maximum production of 8,166,973 kegs was reached. These figures relate to Iron and Steel Cut Nails and Cut Spikes in the United States and do not embrace Railroad and other Spikes made from bar iron, Wire Nails of any size nor machine-made Horse Nails.

Ten States made Cut Nails in 1891, two less than in 1890. The following table shows the production of Iron and Steel Cut Nails by States from 1886 to 1891 in kegs of 100 pounds. For convenience in comparison the total Wire Nail production for these years is added to the table. The rapid gain of the Wire Nail upon the Cut Nail is thus clearly exhibited:

States—Kegs.	1886.	1887.	1888.	1889.	1890.	1891.
Pensylvania	2,569,237	2,238,165	2,072,969	1,834,899	1,825,824	1,470,613
Ohio	1,703,790	1,672,128	1,522,951	1,546,928	1,418,621	1,408,449
West Virginia	799,600	827,325	1,141,151	980,346	957,694	768 648
Illinois	614,055	275,072	241,981	204,438	130,806	97,400
Massachusetts	516,749	267,453	280,301	229,803	191,573	359,292
New Jersey	345,168	346,117	275,591	252,067	260,367	
Indiana	339,992	399 040	175,397	138,200	229,964	383,445
California	224,163	258,193	240,000	242,000	220.000	164,000
Virginia	212,552	250.519	245,755	194,998	202,560	107,475
Alabama	206,500	54,000	.....	.....	.....	.....
Wisconsin	205,480	78,940	41,715	11,435	3,883	.....
Kentucky	144,000	159.720	206,783	165,000	194,654	248,854
Tennessee	88,289	36,473	.....	.....	.....	.....
Colorado	52,383	45,725	41,997	544	.....	.....
New York	34,015	.....	.....	.....	.....	.....
Nebraska	5,000	.....	.....	.....	.....	.....
Missouri	.....	.....	.....	.....	5,000	.....
Total cut nails	8,160,973	6,908,870	6,493,591	5,810,758	5,640,946	5,002,176
Total wire nails	600,000	1,250,000	1,50 ,000	2,435,000	3,135,911	4,114,385
Grand total	8,760,973	8,158,870	7,993,591	8,245,758	8,776,857	9,116,561

In the above table it has not been attempted to divide the Iron Nails from the Steel Nails. In 1884 Steel Nails were first made in this country in commercial quantities and the Steel Cut Nails produced that year amounted to 5 per cent of the total Cut Nail production. In 1889 Steel Nails represented 69 per cent. of the total Cut Nail production and in 1890 they represented 68 per cent. In 1891 the falling off in the production of Cut Nails was greater in the Iron Nail producing districts than in the Steel Nail districts. The Steel Nail production of 1891 was 75 per cent. of the total Cut Nail production of that year.

The Wheeling district has long been the leading Cut Nail manufacturing district of the United States. This district embraces the Nail mills in Ohio and Marshall counties in West Virginia and in Belmont and Jefferson counties in Ohio. There were 1,609,933 kegs of Nails made in this district in 1891 (nearly one-third of the whole production) against 1,744,385 kegs in 1890, 1,825,956 kegs in 1889, 2,137,845 kegs in 1888, 1,848,116 kegs in 1887 and 1,858,551 kegs in 1886. Large quantities of Cut Nails were once made in Allegheny County in Pennsylvania, but no Cut Nails were made in this county in 1891 and only 52,536 kegs in 1890. In place of Cut Nails, Wire Nails are now made in Allegheny County in large quantities.

Wire Nails.

The report refers to the production of Wire Nails as follows:

While small sizes of Wire Nails were made in this country in small quantities for many years prior to 1886, it was not until that year that the manufacture of Wire Nails became an important industry. The production of Wire Nails in 1886 was estimated at 600,000 kegs. Since 1886 the manufacture of Wire Nails of all sizes has rapidly increased. In 1887 the production was estimated at 1,250,000 kegs; in 1888 at 1,500,000 kegs; in 1889 direct reports from most of the works showed the production to be 2,435,000 kegs; in 1890 the production increased to 3,135,911 kegs, and in 1891 it jumped to 4,114,385 kegs.

In the following table we give the production of Wire Nails in this country by districts in the last three years, in kegs of 100 pounds, as ascertained from the manufacturers:

Years—Kegs.	New England.	New York and New Jersey.	Pensylvania.	Ohio.	Indiana and Illinois.	Other States.	Total. Kegs.
1889	110,000	170,000	816,000	944,000	46,000	349,000	2,435,000
1890	167,135	168,460	1,061,639	1,115,320	47,507	575,850	3,135,911
1891	193,668	128,159	1,460,252	1,059,396	381,950	290,960	4,114,385

The Wire-Nail production of 1891 was produced by 46 works and the production of 1890 by 47 works. Several very small factories gave up the business in 1891, but the reduced production from this cause was much more than made up by the larger establishments. There were 49 completed Wire-Nail works in the United States at the close of 1891 and two large works were in course of erection.

The "other States" referred to in the table as making Wire Nails in 1891 were Michigan, Missouri, Iowa and California. The Wire-Nail plant built in Kentucky has been removed to Indiana.

It Is Reported—

That the Hardware store of Storrs, Chatfield & Co., Owego, N. Y., was robbed on the 21st ult. The loss is estimated at $150.

That Hanert & Hagen's Hardware store at Appleton, Wis., was entered by burglars several weeks ago and a number of articles stolen.

That Dye & Breeze have purchased the Hardware store of A. D. Dye & Co., Towanda, Pa., and are putting in new stock and making improvements in the store.

That J. R. Hewitt, Jackson, Cal., has sold out his stock of Hardware, &c., to George Weller.

That F. Roush & Son, Frankfort, Ind., have been succeeded by J. G. Shanklin in the Hardware business.

That J. R. Brumfield, Kokomo, Ind., has commenced the retailing of Guns and Sporting Goods in that place.

That W. M. Colby Company, Boston, dealers in Hardware, have been recently incorporated, with a capital of $10,000.

That J. C. Walch, Vermontville, Mich., has commenced the Agricultural Implement business.

That Klepinger & Weybright, West Milton, Ohio, are successors to Oliver Klepinger in the Implement and Buggy business.

That Thomas, Barnes & Miller, Memphis, Tenn., are successors to Barnes, Miller & Co., dealers in Hardware, &c.

That Palermo, Ill., has a new Hardware store, conducted by B. K. Reed & Co.

That Ross, McCrea & Brown have commenced the Hardware business at Brazil, Ind.

That Middleton & Bennett are a new Hardware firm at Eagle Grove, Iowa.

That G. A. Starr has opened a new Hardware store at Lamont, Iowa.

That Rotterman & Hanna have opened a store at Mulhall, Ok., for the sale of Hardware and Tinware.

That W. A. Chapson will engage in the Hardware business at Garrison, Col.

That James Swift has opened a Hardware store at Leavenworth, Kan.

That the firm name of Roberts, Holt, & Fair, dealers in Hardware, Implements and Building Material, Chase City, Va., has been changed to B. A. Roberts & Co. Mr. Fair has withdrawn from the business, and W. V. and L. Gregory have become interested.

That Foote & Church, Hardware dealers, Flint, Mich., have removed to their new and commodious location.

That H. C. Greenwood, Marlboro', Mass., has sold his stock of Hardware to Lamson & Robinson, who took possession of it May 1.

That the McHenry Hardware Company, Hillsboro', Ill., have been incorporated,

with a capital of $7,000. The incorporators are G. C. McHenry, J. M. McHenry, and C. F. McHenry.

That Chas. Baum of Minden, Neb., has disposed of his Hardware interests there and removed to Colorado.

That Midgett & Nicols have opened a new Hardware store at National City, Cal.

That J. H. Snyder has purchased a Hardware store at Tokoa, Wash.

That L. Thompson, Bangor, Wis., is fitting up a building preliminary to opening a Hardware store.

That the Rome Hardware Company, Rome, Ga., have commenced the erection of a new building.

That W. S. Carman, E. R. Matthews and John Laidlaw have bought the Hardware store of George Foster at Alexandria, S. D.

That Franklin Rummel has opened a Hardware store at Sioux Falls, S. D.

That Brocklesby & Co., Caledonia, Ohio, have sold their Hardware store to M. R. Harrison and J. H. Irey.

That Leonard Compton will open a Hardware store at Tipton, Ind.

That Richard & Schindle have opened a Hardware establishment at Hagerstown, Md.

That L. Billings has sold his Hardware store at Stoughton, Mass, to E. T. McNamara.

That Bixby & Miller are a new Hardware firm at Oneonta, N. Y.

That the Alliance Implement Company, Spokane Falls, Wash., have recently been incorporated. Capital, $100,000.

That W. Ousterhout has purchased a half interest in the Hardware store of Grier Bros., Punxsutawney, Pa.

That W. W. Campbell & Son have purchased the Hardware store of W. C. Hawkins, Franklin, Pa.

That R. M. Hanks opened a new Hardware store at Elizabethown, Tenn, May 1.

That Pillsbury & Sawyer have purchased the Claycomb Building, Monmouth, Ill, and will remodel it for their Hardware store.

That E Bement & Sons, Lansing, Mich., will open a large Retail Hardware establishment.

That F. C. Torrey has purchased the Hardware store of L S. Roberts, Osceola, Pa., and will take possession as soon as the inventory is completed. Mr. Roberts has bought a Hardware store at Wellsville, N. Y.

Saturday Half-Holiday.

WE TAKE PLEASURE in giving below a circular issued by the leading houses in the Tool and supply trade of New York announcing their agreement to close their places of business at 1 p.m. on Saturday during the coming summer months. It is expected that similar action will be taken by the houses in other lines and that the observance of Saturday afternoon as a holiday will be general in the trade. The circular above referred to bears date May 10 and is as follows:

To the Trade:—We, the undersigned, hereby agree to close our respective places of business at 1 p. m. on Saturdays, commencing May 28, to and including Sepember 10, 1892.

May 28 being the Saturday preceding Decoration Day, closing on that day will enable us to enjoy a three days' rest.

Signed:

PETER A. FRASSE & CO.
MONTGOMERY & CO.
E. P. REICHHELM & CO.
PATTERSON, GOTTFRIED & HUNTER.
FRASSE & CO.
CHURCH & SLEIGHT.
EST. OF F. W. GESSWEIN.

Trade in Louisville.

(*Report from a Special Correspondent.*)

THERE IS NO USE to deny it, trade of all kinds is dull in this city and through the whole South, particularly in the western portion. All the sections through which our big rivers run are suffering seriously from overflows. In many places grave disasters have occurred to life and property, and much distress is found. The excessive rains prevent any attempt at cultivation even where the crops have been put in. A week of sunshine will change conditions very quickly, making the fields fairly alive with work where they have been abandoned for several weeks. Under such conditions it would be remarkable if trade was anything but slow, coupled with the fact that it is about time for the Hardwaremen to feel a cessation of heavy spring business. The general depression as to prices has given the idea that a small amount of business has been carried on this spring, but very few order books will show a decrease in volume from a year ago, and most of them will prove quite a handsome overplus, for the Hardware business, like nature, never stands still, and the go and push in the trade is something remarkable. When the active demand does keep the jobbers hustling the impetus comes the other way, by the manufacturers offering them extreme low prices, and then the jobbers hustle around to get rid of the goods again. And it is not all done for love, either; even the manufacturers are not philanthropists. Every once in a while we hear of a probable advance in price of this or that article, but what is to cause it? Certainly not scarcity in any staple line of goods.

Every one goes for cheapening cost of production by increasing the amount produced on the same machinery, capital and labor, and this, of course, means they can sell for less; and the minute they can do so they are unselfish enough to give away their advantage. The truth of it is, the demand is not equal to the supply, by any means, and the surplus is forced on to the market.

Trade Items.

SMITH & EGGE MFG. COMPANY, Bridgeport, Conn, are sending out a unique glass paper weight advertising their goods. It is 2½ x 4 inches in size and ⅞ inch thick. Looking at it from the top, an illustration of a Giant Padlock is seen, on which is the firm's name. Above and below the Padlock are the words "Giant Metal Sash Chains and Hardware Specialties." The corners of the weight are rounded, the whole making an attractive addition for the desk.

THE CONGDON BRAKE SHOE COMPANY, Chicago, are adding a steel casting plant to their works, which they intend having ready for business about July 1.

GASTON, WESTON & LADD, 46 Beekman street, New York, state that Prestoline is manufactured under the scientific formula made out by Professor Gaston, which formula is strictly observed in every particular, and every precaution is used to prevent the slightest departure therefrom. It is designed for imparting brilliancy to metals, and is recommended for use on Harness Trimmings, Bicycles, Yachts, Grate Fixtures, Faucets, Lamps, &c. They add that it is easily applied, gives a fine luster and is lasting in its effects.

J. A. CAULDWELL, Owego Iron Works, Owego, N. Y., is manufacturing Cauldwell's Patent Iron Lasts and Standards, four styles of which are put on the market -Nos. 1, 1½, 2 and 3. No. 3 embodies the latest improvement, being equipped with a base so made that the feet can hold the device steady while in use. It is pointed out that this base can also be detached and used for a lap stone.

ANNOUNCEMENT is made that the Geo. Worthington Company, Cleveland, Ohio, have secured the agency for the Bieder Adjustable Grass Catcher, manufactured by the Cleveland Novelty Company of Cleveland. This article, as now put on the market, embodies some improvements which have been made in it for the present season.

MITCHELL, LEWIS & STAVER COMPANY, Portland, Ore., issue a circular devoted to road making and the improvement of country roads. They make a specialty of Machinery for this work, including Earth Moving Tools and Machinery of all kinds, Drag Scrapers, Railroad Barrows, Dump Carts, Cart Harness, &c. They are referred to as carrying the largest stock of these goods on the Pacific Coast.

THE ARCADE FILE WORKS, which have been operated in Sing Sing, N. Y., since 1842, closed their doors May 20. The concern are moving to Anderson, Ind., where new buildings have been in process of erection upon ground donated by the city. The company have taken 200 mechanics and their families with them to their new location. At the company's New York office, 83 Reade street, a satisfactory business is reported.

AN ANNOUNCEMENT in regard to the sale of the property of the Fieldhouse & Dutcher Mfg. Company, Chicago, appears among the Special Notices of this issue, where it is stated that sealed proposals will be received until noon of June 15, 1892, by W. F. Kyle, manager for the trustees of the company, for the sale of the entire property, including accounts, or for the sale of the merchandise, machinery and fixtures, in whole or in part. It is stated that the books, accounts, merchandise and other property will be exhibited to any responsible persons who may wish to submit proposals for purchase.

THE TRADE WILL OBSERVE among the Special Notices the advertisement of George L. Smith, Box 414, Syracuse, N. Y., in which he makes an announcement which may be of interest to manufacturers of specialties who are desirous of having their articles brought to the attention of the trade. Mr. Smith's plan applies especially to articles which are not of sufficient importance to justify traveling for their sale apart from other goods, and can be handled by traveling men as a side line.

THE CONNECTICUT VALLEY MFG. COMPANY, Centerbrook, Conn., offer their Auger and Bit factory for sale. An announcement in regard to it will be found among the Special Notices on another page, where information is given in regard to the factory and an intimation that the plant can be purchased at a low figure.

C. H. BESLEY & CO., Chicago, have removed their office, salesroom and stock of Machinists' Tools and Supplies to their new warehouse and storerooms, at 10 and 12 North Canal street, where they have better facilities for serving the trade and space to carry a much larger line of goods.

THE WARNER LOCK COMPANY, who have their offices at rooms 411 and 412,

Manhattan Building, Chicago, are erecting a new factory in a desirable and convenient location near Chicago, which they expect to occupy about the middle of the summer.

HARRY A. PHILLIPS and FRANK H. ETHERINGTON, under the title of Phillips & Etherington, have just opened a very attractive and well-arranged Hardware store at 2936 Market street, Philadelphia, in a new building, with every facility for storing and displaying goods.

ALBERT J. HIGGS, 15 Rue Vifquin, Brussels, Belgium, issues circulars relating to the lines of goods which he is offering for export trade as agent for the manufacturers. The goods thus represented are the Wire Nails, Cut Tacks, &c., of A. Baudoux, and Revolvers, Pistols, Enameled Ware, &c., of other Belgium manufacturers. Oil Stones and German Razor Hones are represented in separate circulars.

C. E. JENNINGS & Co., 97 Chambers street, New York, are introducing a new Bird's Eye Maple Box containing a set of Royal Blue Bits $\frac{1}{16}$ to $\frac{1}{4}$, No. 635. These Bits are described as carefully made from fine steel, with improved lip and spurs, ground to size, and as having a uniform clearance. The pistol-blue finish on the hollow of the twist is for the prevention of rust, and adds to the style and appearance of the Bits. This house has made a feature of putting up various edge tools in sets in boxes, and this recent addition to their line will be appreciated by the trade.

IT IS ANNOUNCED under date May 15 that the general agency for the Tanite Company's (Stroudsburg, Pa.) Solid Emery Wheels and Grinding Machines recently held by the Curtis Mfg. Company, Chicago, has been transferred to S. D. Kimbark of that city. It is stated that the house of S. D. Kimbark has for many years held the agency for the Tanite Company's goods for foundry, machine shop and general use, but now undertakes for the first time the sale of Wheels for sawmill use. This consolidation of Tanite agencies places in the hands of Mr. Kimbark, it is claimed, the largest and most complete stock of Emery Wheels in the Northwest. The Tanite Company call attention to the fact that this is their own consigned stock, and that in buying of Mr. Kimbark customers do not deal with a rival merchant, but buy of the Tanite Company through their regularly constituted agency.

IN ONE OF THE Special Notices which appear in this issue the advertiser, who is looking for some Screw machinery, requests manufacturers in this line to mail him full descriptive list of what they have to offer. Information as to the capacity of the machines and lowest net cash price is also requested.

THE VARIED LINE of goods put on the market by Theo. J. Ely Mfg. Company, Girard, Pa., are referred to in their advertisement on another page, in which illustrations are given of Ely's Perfection Saw Handle, Krick's Metallic Adjustable Poke and Krick's Dandy Trap. Besides these goods the company are also manufacturing Drury's New Domestic Clothes Drier, Safety Jockey Stick, Handy Thill Anti-Rattler, Drury's New Domestic Chimney Cleaner, Pefection Carriage Top Dressing, &c.

A PHILADELPHIA HARDWARE HOUSE recently referred to the dullness of trade, especially in Builders' Hardware, and to the very active competition. It was stated that they recently accepted contracts for a large number of houses at terms they would not have considered a year ago, their object being to keep busy and work off stock on hand in order to replenish with new goods. As illustrating the animated competition between the different houses, it was mentioned that a builder recently had 11 offers to supply the Hardware for a house he was erecting, although it amounted to a little over $9. The effect of this is, of course, to reduce profits to a minimum.

Price-Lists, Circulars, &c.

HOWARD CUTLERY COMPANY, 65 East Ninth street, New York: Shears, Scissors, Razors, Razor Strops, &c. Their brands include Howard Scissors and Shears, H. H. H. Shears, Belmont Cutlery Company's Scissors and Shears, Howard Razors and Owl Razor Strops. They continue to furnish tags with the retail prices with Howard goods. The Belmont Cutlery Company's Scissors and Shears are offered to the trade to supply a demand for a line of popular priced goods, which can be sold at retail for 25 cents a pair.

ROUSE, HAZARD & Co., Peoria, Ill.: Bicycles. The company, besides manufacturing Bicycles, make a specialty of buying job lots of new machines, when desirable patterns are found. They also carry a large stock of second-hand Cycles of all makes, and sell all makes of new Cycles. They state that they thoroughly examine and repair every second hand wheel, each of which is put in first class running order, general wear excepted. The job lot and second-hand machines are sold at desirable prices, and upon easy terms.

SIMMONS HARDWARE COMPANY, St. Louis, Mo.: Swift, Western and Rustler Bicycles. Their 1892 circular, No. 211, describes and illustrates these goods, together with Bicycle Sundries and prices. The company state that in selecting their assortment of Safety Bicycles for 1892 they have aimed to include the latest improved and most desirable patterns, giving a wide range of selection while avoiding an unnecessary multiplicity of styles and sizes.

THE FOX MACHINE COMPANY, Grand Rapids, Mich: Wood and Iron Working Machinery. Their special lines of manufacture are Trimmers, Mitering Machines, Dado Saw Heads, Dado Machines, Tenoning Machines, Shapers or Iron Planers, Three-Spindle Boring Machines, Low-Water Alarm, also Water Column complete with both High and Low Water Alarm. The manufacturers state that during the past year they have made valuable improvements in their Trimming and Mitering Machines

N. O NELSON MFG. COMPANY, St. Louis, Mo.: Plumbing Goods and Supplies for Steam Fitters and Gas Fitters. Their catalogue No. 19, for 1892, is a handsome volume of 598 pages, bound in blue cloth, fully illustrated, and printed on a fine quality of paper. They state that in the two years which have elapsed since the publication of their last catalogue of Plumbing Goods the advance of sanitary science has been rapid beyond precedent, and that the largely increased demand for better and handsomer sanitary appliances gives evidence that architects and plumbers have been doing effective educational work. Their manufacturing plants have been enlarged to more than double their capacity of two years ago. Among other effective illustrations are those of special designs of decorated Basins, shown in colors. The catalogue will be a valuable addition to those interested in this line of goods.

JOHN WALSH, 387 Third avenue, New York: Grates and Fenders, Open Fire Places, Andirons, Fire Sets, Imported and Domestic Tiles for Hearths and Facings, Terra Cotta Gas Logs. The construction and increasing popularity of Gas Logs are referred to in the following terms: "Nothing in the gas heating line has increased more in popularity during the last few years than Gas Logs. That their use has so largely increased is due solely to their intrinsic merits, as the serviceability and beauty of the fires fully warrant their general use. They have been used in this country for the past 25 years. Being made of carefully selected fire clays, well adapted for the purpose, they have in that time thoroughly proved their durability as to fire service, and their usefulness as a means of house warming. They are modeled in imitation of a pile of wood for burning in a fire place. The sticks comprising the group are made hollow, and are connected with the gas pipe. The gas being introduced into the logs finds its exits through a large number of small perforations, and all that is necessary to have a glowing fire at a moment's notice is to lay a piece of lighted paper on the log and turn on the gas."

HOFFMANN & BILLINGS MFG. COMPANY, Milwaukee, Wis.: Steam Goods, Gas Fixture Fittings, Oil Cups, Water Gauges, Screw Plates, Pipe Cutters, Radiators, &c. In issuing this catalogue of 295 pages, the manufacturers state that they have endeavored to show the various articles used by steam and gas fitters to the best advantage possible, both in the illustrations and in their proper arrangement. In addition to these goods, they make a complete line of Plumbers' Brass Work, Soil Pipe and Fittings, Sinks, &c.

GEORGE BURNHAM & Co., Worcester, Mass.: Drilling Machines for Blacksmiths, Carriage Makers and Light Machine Work; Clamp Drills and Railroad Portable Drills. Upright Drills are shown in a variety of forms and sizes, together with Bench Drills and Drill Chucks. The Portable Railroad Drilling Machine is also used for bridge builders' and structural work. It is stated that it will do the work of a Ratchet Drill in one-fifth of the time.

ENTERPRISE MFG. COMPANY, Akron, Ohio: Fishing Tackle. Illustrations are given of Hooks tied to gut and gimp; Pflueger's Minnow Gangs, Pflueger's Luminous Artificial Flies, Phantom Minnows, Rubber Insects, Floats, Sinkers, Feathered Hooks, Fluted Spoons, Furnished Lines, &c. Attention is called to the fact that they make most patterns of Spoon Bait in four different grades, thereby enabling the dealer to suit all classes of people in prices from the laborer to the capitalist.

CARTWRIGHT SPRING WAGON WORKS, Louisville, Ky.: Buggies, Surreys, Phaetons, Phaeton Carts, Wagonettes, Business and Pleasure Spring Wagons, and all kinds of City Delivery Wagons. They call attention to the fact that they are gradually dropping their different styles of cheap road wagons, and intend to confine themselves more exclusively to the manufacture of high grade pleasure vehicles. They will also build a fine line of City Delivery Wagons, and are prepared to build, on order, any special Wagons when furnished with full specifications.

SATTLEY MFG. CO., Springfield, Ill. Riding and Walking Plows, Buggy Poles Harrows, Cultivators, and Capital City Straw Stacker. Special attention is directed to their Hammer Plow, Spring Tooth Cultivator and Walking Plows.

THE STURTEVANT LARRABEE COMPANY, Binghamton, N.Y.: Carriages and Sleighs. Their 1892 catalogue illustrates Open Buggies, Covered Buggies with Pell spring, Drop Axle and Spring Corning, Brewster Side Bar, Corning Body, Phaeton Seat; also Brewster Surrey, End Spring Surrey, Monmouth Driving Wagon, &c. They state that they have lately enlarged their facilities for production and increased the number and styles of vehicles manufactuerd.

THE CLEVELAND HARDWARE COMPANY, Cleveland, Ohio: Wrought Iron and Steel, Wagon, Carriage and Sleigh Hardware, Steel Tire and Special Shaped Iron rolled to order. Their 1892 catalogue is a neat illustrated book of convenient size, printed on a good quality of paper, showing a line of the above mentioned goods, with list prices of the same.

PENNSYLVANIA AGRICULTURAL WORKS, A. B. Farquhar Company, York, Pa.: Agricultural Implements and Machinery. Their 1892 catalogue, representing the products of their thirty-fifth business year, calls attention to the Pennsylvania Drill, Farquhar Vibrator, Farquhar Low-Down Champion Thresher, Champion Lever Float and Wheel Spring Tooth Harrows, Pennsylvania Steel Frame Zig Zag Spring Tooth Harrows, Riding and Walking Cultivators and Double Row Corn Planters, all introduced within the past few years.

COLUMBUS BOLT WORKS, Columbus, Ohio: Supplement to 1891 catalogue, Carriage Hardware Illustrations and prices are given of Double Perch Gear Irons, Finished King Bolt Yokes, King Bolt Yoke and Brace, Finished Perch End, Finished Stay Braces, Long Pole Eyes, Finished Body Loops, Head Block Plates, &c. A discount sheet accompanies the supplement.

ROCKFORD ELECTRIC MFG. COMPANY, Rockford, Ill.: Arc and Incandescent Dynamos, Motors, Power Generators and appliances under the Mayo system. The manufacturers state that their aim is always to make machines of the simplest and most efficient type; machines that will not require an expert electrician to look after them, but can be attended by any mechanic or engineer.

THE CHAMBERLIN CARTRIDGE AND TARGET COMPANY, Cleveland, Ohio: The Chamberlin Machine-loaded Cartridges, Blue Rock Pigeons and Traps. Illustrations are given of these goods, together with rules for target and live bird shooting. The manufacturers state that all their Traps, Targets and Pulls and their devices and machinery for their manufacture are fully protected by patents.

KERR BROS. & CO., Hicksville, Ohio: Handles, Wooden Forks, Cupboards, Safes, Extension Tables, Hardwood Lumber, &c. Illustrations and prices are given of these goods. In connection with the above goods they make a specialty of Wood Turnings of every description.

HENNEY BUGGY COMPANY, Freeport, Ill.: Fine Light Cabriolets, Surreys, Phaetons, Park Wagons, Spring Wagons, Road Wagons, Buggies, &c. Their catalogue gives illustrations of these goods.

J. H. STERNBERGH & SON, Reading, Pa. Every variety of Bolts, Nuts, Boiler, Bridge, and Ship Rivets; Washers, Rods, Irons, Forgings, &c. They have had specially large demands for their Harvey Grip Track Bolts and Boiler Rivets. They advise us that though their works were destroyed a year last February, they made and shipped more goods than in any previous year. They promptly rebuilt their works with enlarged facilities.

THE AULTMAN & TAYLOR MACHINERY Co., Mansfield, Ohio.: Threshers, Separators, Stackers, Clover Hullers, Horse Powers, Traction Engines, &c. They do in addition a great deal of work in the way of large Iron or Steel Water and Oil Tanks, also Vacuum Condensers, and Evaporating Pans for Salt Works.

DOVER STAMPING COMPANY, Boston, Mass.: Tinners' Hardware and Furnishing Goods. Illustrations are given of Deep and Common Stamped Ware, retinned and plain; Sheet Copper Ware, Acme Pieced Tinware, buffed, Japanned and Toilet Wares, Porcelain-lined Cast-iron Hollow Ware, Wire Goods, Registers, Water Coolers, Ice Cream Freezers, Dover Egg Beaters, Table and Basting Spoons, Coal Hods, Stove Shovels, &c.

THE ALUMINUM BRASS AND BRONZE COMPANY, 53 Chambers street, New York, and Bridgeport, Conn.: Special Alloys in sheets, rods, wire, castings and forgings, Silicon Bronze Trolley Wire for electric railroads, Pure Aluminum, Aluminum Bronze, Aluminum Silver, Brass Circles, Copper Bottoms, Craig Silver, German Silver Wire, German Silver in sheets and rolls, &c.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Rainy weather has again unfavorably affected the distribution of various descriptions of Paints and Colors, causing stagnation in those lines that are largely consumed in out-door work. The effect of the adverse weather conditions was as prominent in out-of-town orders as in nearby and local movement, and, upon the whole, it would appear that manufacturers and jobbers experienced about as poor a week as they have ever encountered during a spring season. In various specialties there has been a relatively better trade, however, yet nothing more than the average for this season of the year. Little or no pressure to force business has been observed, however, nor have other conditions arisen calculated to disturb values. Hence, former quotations rule and a fairly firm undertone still prevails despite the dullness experienced.

White Lead.—Corroders have secured only moderate sized orders the past week, and comparatively few of them. Manufacturers of mixed Leads also report a quiet trade, and the distribution from second hands has been below the May average also. No changes in prices of any class of Pigment have been made by manufacturers, however, and concessions by jobbers do not prove to be greater than those that have frequently occurred during the season whenever a little shading of list prices for small quantities would help along the sale of other goods.

Red Lead, Litharge, &c.—Buyers' operations are on about the usual scale, hardly as free, perhaps, at the present time as they were early in the month, yet of nearly the average volume for the season. Prices are without the least change, there being no outside competition that would prompt any change by the combined manufacturers.

Zincs.—On the market for American Oxide nothing is learned from manufacturers that reflects any change in the situation, and elsewhere the reports are equally as bare of news. The gist of the general report is that deliveries continue large and that some buyers are urging prompter shipments, while new orders are very fair, although showing some falling off the past week. Foreign brands meet with about the usual rate. Prices for all varieties remain steady and unchanged.

Colors.—Dry Colors for grinders' use have been rather quiet, orders for spot parcels being hardly up to the average, while purchases for future delivery are few and far between. Colors for house painters use, both Dry and in Oil, have also been rather quiet. Some irregularity is noted in prices of certain common and low grade stock, but goods that possess merit remain quite steady at old rates.

Miscellaneous.—Manufacturers of Metal Paints note a rather quiet market, yet a very fair distribution all told, and with competition temperate prices hold quite steady. The finer class of ready-mixed Paints for house painting and special work are selling very fairly, but sharp competition keeps the market for inferior goods in a ragged condition. Whiting does not appear to be on sale at the extreme lowest prices that were accepted a week or two ago, the demand being better and the competition for orders less fierce. No change has taken place in the market for Block Chalk. Barytes and Clays generally are quiet at about previous prices.

Oils and Turpentine.

The market for nearly all varieties of Oils has remained quite steady throughout the week, and bare of distinctly new feature. Some little speculative interest in Cotton Seed product was manifested at intervals, but otherwise nothing beyond routine trade demand has prevailed, while the offering has been reserved, indicating generally favorable position of supplies and confident feeling on the part of sellers. The surroundings are practically the same as they were a week ago, Candle materials in general being quite firm, with tendency more in the direction of improvement than toward a lower level, thus pointing to steady if not better prices for the leading Oils in the immediate future.

Linseed Oil.—Up to the 24th inst. no change took place in the market for either city or outside brands, although higher cost of raw material and indications of a more satisfactory agreement between crushers being entered into prompted more than ordinary reserve on the part of sellers, while evidence that cheap lots in second hands had become scarce prompted freer orders from large consumers. Various conditions thus led up to a stronger market, and on the date above named prices for domestic seed product were advanced. Out of town crushers put their figures at 41¢, and city crushers immediately raised theirs to 42¢, leaving Calcutta Seed Oil at 58¢. The advance checked business momentarily, but at this writing the movement is somewhat freer.

Cotton-Seed Oil.—While prices have fluctuated within very narrow limits, the market for both Crude and Refined product has hardened a trifle. At the present time 29½¢ for prime Crude and 31½¢ @ 32¢ for prime Summer Yellow is close value, and corresponding prices are asked for inferior grades. Exporters' purchases continue light and those of the home trade are of merely routine character; but the general distribution involves fully the average quantity moved at this season of the year, and anything that comes up in the way of cheap lots seems to be taken care of by local representatives of the two largest producers. In other words, the market is carefully looked after by the leading producing interests, and exporters rarely secure better terms than about ½¢ concession on the price at which ordinary sized parcels are dealt out to the home trade.

Lard Oil.—Prime Oil turned out by local pressers is nearly all taken up in delivery, and former orders and the arrivals of outside makes are also well disposed of. Besides this a fair amount of new business is noted, so that the market is kept in strong position, quite apart from the influence of cost of raw material.

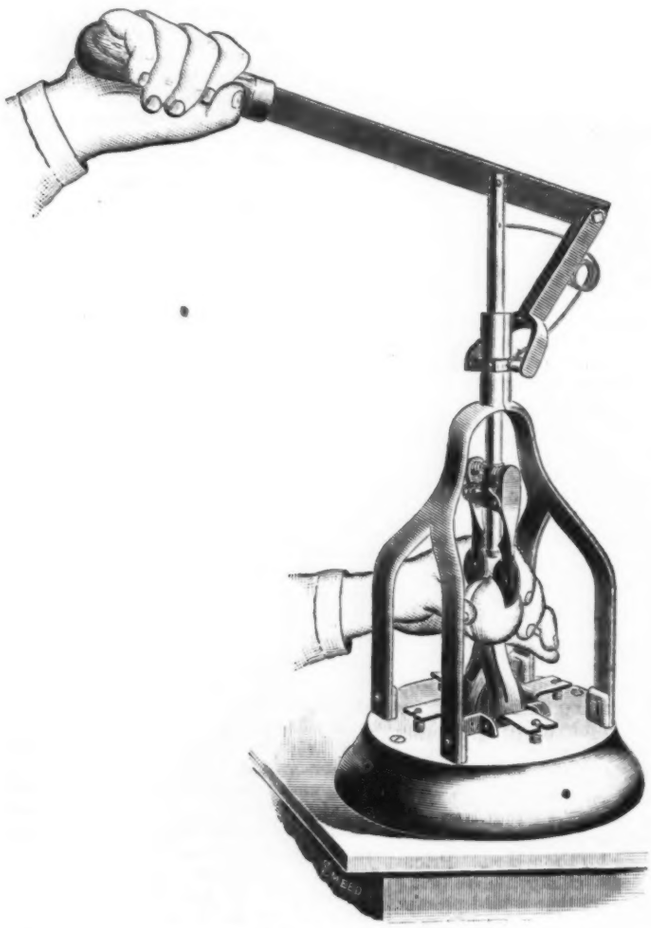
Fish Oils.—The Manhaden fishing has been favorable thus far, and some new crude Oil is now coming upon the market. About 250 barrels prime quality realized 31¢. On crude Sperm and crude Whale there have been no new developments. The general line of manufactured Oils moves at about former prices and to a fair extent.

Miscellaneous.—Very fair sales of Ceylon Cocoanut Oil have been made at 5½¢ @ 5¾¢ on the spot. Importers' stocks were thereby reduced considerably, and ¼¢ @ ½¢ advance is asked for spot goods. Common Olive Oil is yet rather slow of sale and barely holding its own in price.

Spirits Turpentine.—A further decline in prices has taken place in this market, regular barrels selling at as low as 31¢ and machine barrels at 31½¢, under the influence of anxiety on the part of some sellers due to a few hundred barrels accumulation on their hands.

Smith's Improved Peach Cutter and Stoner.

The device represented herewith is being put on the market by the Clark Novelty Company, Rochester, N. Y., as manufacturers and general agents. In this machine the peach is cut into two equal parts by circular blades which revolve or travel around the stone from end to end, while the stone punch collides with the upturned end of the stone, which is driven forcibly through the opening of the scrapers. The scrapers play back on coiled springs so as to admit a peach stone from ½ inch to 1½ inches in diameter, and as they are so adjusted as to follow the shape of the stone, it is stated that they strip or completely separate the meat or pulp from the stone, and the two parts of the peach fall off into a receptacle, while the stone goes through the opening in center of the base of the machine into a vessel separate from the fruit. The manufacturers claim that the machine will cut and stone any sized peach without straining or breaking if directions are followed. The stoner can be mounted on legs or screwed to a bench and a hole cut through the latter to let the stone through. This machine is intended for the use of evaporators, preservers, canners and private families, and it is claimed that it will cut and stone from three to five bushels of peaches per hour. It is especially made for clingstone peaches, but will, it is stated, also cut the freestones, as well as any other fruit having a large pit or stone.



Smith's Improved Peach Cutter and Stoner.

Alcott's Hand-Line Reel.

J. H. and C. H. Alcott, Thomaston, Conn., are offering this article, as illustrated herewith. It is ⅛ inch longer than shown in the cut, nicely nickel plated. The screw is pivoted, so that it naturally assumes an upright position, but it may be turned either way as desired. The reel is designed to screw into a boat, which may be done without the use of any tool to make a hole, and upon which a line may be wound quickly if the boat is to be moved. The screw may be turned within the reel when not in use. The point is made that, as the screw goes in but ⅝ inch, no hole is made through the boat. When in use the line may be quickly fastened by giving it a half hitch over a prong of the reel. It may also be used as a corkscrew when occasion requires. The manufacturers claim that it is strong and durable, will never rust, and that it will hold 50 to 100 feet of ordinary line, or 175 feet of very fine line.

Alcott's Hand-Line Reel.

Janeway's Dinner Pail.

W. F. Janeway, Columbus, Ohio, is offering this pail, as illustrated in Fig. 1. The pail is used for tea or coffee, the lower pan for the main dinner and the shallow pan for pie or cake. It is made of heavy stock, nicely finished, and is provided with a wired strap which hooks into a wire staple at one end and passes over a staple at the other, through which a wooden peg or padlock may be passed. The pail is also furnished without the strap or shallow pan. The pail is designed for miners, railroad men and others who carry a large quantity of tea or coffee Instead of being obliged to remove the dinner in the mine, and getting dirt into it, the miner can drink his fill by drawing it through the spout, as the spout terminates in a hole at the bottom of the pail. The lock strap prevents the cover being knocked off when hitting the pail in getting off and on cars, and prevents the dinner being stolen, by locking the pail. The large space for carrying the coffee is referred to as a desirable feature, and a great improvement over a flask, or a shallow receptacle attached to the lid of the pail. The point is emphasized that drawing the coffee through the spout is much pleasanter and more desirable than drinking from a pail or cup; also that with this spout there is no danger of any of the coffee being wasted. The lock strap and spout add but 15 cents at retail to the price of a pail, while either spout or lock strap alone adds 10 cents. These pails are sold so they may be retailed at 45 to 75 cents, according to the size of pail and number of pans.

Janeway's Dinner Pail.

There are now in New York City 1441 miles of subways, of which about one-half are for telegraph and telephone wires and the remainder principally for electric light wires, so that very few wires of any description are now visible other than messenger wires on the tops of houses. Up to date into these subways have been placed 27,700 miles of wire for telephone and telegraph service and over 900 miles of wire for electric lighting service. The largest manhole is at Cortlandt street and Broadway, where there are 240 pipes containing 2400 different wires At a rough estimate it has cost $4,000,000 to change from the aërial system.

The man who stands by the side of a trout brook, his debts all paid, his business reasonably prosperous, his wife and family in good health, and a deep pool in sight in which a dozen speckled gamesters are ready for a tussle, has in sight nine-

tenths of all the happiness which any one gets this side of heaven!—but, how about the trout?—*Sporting Goods Gazette.*

Carpenter's Adjustable Die Stock.

The J. M. Carpenter Tap and Die Company, Pawtucket, R. I., have discarded all collets from their adjustable die. It has been necessary to supply a suitable guide, so that the iron would enter the die properly when being threaded, which guide is shown in Figs. 1, 2 and 3. Two steel jaws like the one in Fig. 2, hardened and tempered, are inserted in runways in the stock, the jaws being provided with

Fig. 1.—Carpenter's Adjustable Die Stock.

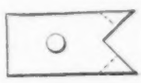


Fig. 2.—Jaws Under Slotted Ring.

short pins as indicated by the small circle on the cut. Over the jaws is placed the ring, Fig. 3, the pins on the jaws fitting into the eccentric slots in the ring. The upper outside edge of the ring is milled, and may be turned back and forth with the hand. By turning this ring back and forth the jaws are moved to and from the center,

Fig. 3.—Ring with Eccentric Slots.

and the eccentric slots are so designed that the jaws will remain in any position to which they are moved by the ring.

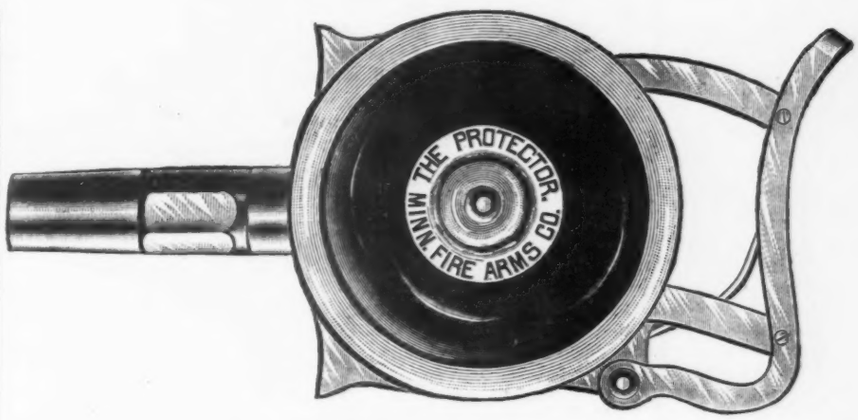
By reason of the guides or jaws being adjustable they can be brought in contact with the iron when being threaded, thus, it is stated, making a perfect alignment for it to pass into the die. This is referred to as a decided improvement over the solid collet as used on dies, and which has to have an entrance large enough to receive the largest iron; hence is loose on smaller iron, and allows the die to be tipped on an angle, thus cutting what is called a crooked thread.

Fig. 4.—Adjustable Die Stock, Showing Adjustable Die.

Fig. 4 gives a view of the reverse side of the stock with the adjustable die held in place by the thumb screw. The die is cut through on one side, and provided with a taper pin which fits a taper hole of corresponding size. All needed adjustment is obtained by moving the pin in or out of the hole, the die, it is explained, being so constructed that it will always retain a pinching or gripping hold upon the pin, whether moved in or out.

The Protector Revolver.

This revolver, which is illustrated herewith, is put on the market by Minneapolis Fire Arms Company, Minneapolis, Minn., for whom Horton, Gilmore, McWilliams & Co. are special sales agents in Chicago. The weapon is intended for the use of bankers, cashiers, wheelmen, watchmen and policemen. It is a seven shot 32-caliber revolver, and it is stated that its action is as simple as it is possible to make a modern revolver. It is referred to as occupying less than half the space of the ordinary revolver, and is thus easily carried in the pocket, the cylinder revolving toward the barrel instead of from left to right. The revolver is provided with a safety attachment, which is designed to prevent the discharge of the weapon when not in use. The wearing parts of the revolver are described as made from the best forged steel, and it is offered as strongly and durably made. Its effectiveness, quickness of operation and reliability are points also made in regard to it. The revolver is made in two grades, and is packed in a neat box, including a brush for cleaning.



The Protector Revolver.

The Eureka Wood Jacket Shipping Cans.

Bates & Hoyt Mfg. Company, Cuba, N. Y., are making the wood jacket shipping cans shown in the accompanying illustrations. These cans are described as made of strong tin plates, inclosed in a firm wood jacket, forming, it is claimed, a light, neat, convenient and strong shipping package. The manufacturers state that the cans have a vent at the top which admits air and insures freedom in pouring. It is also stated that every can is tested before leaving the factory and guaranteed tight. The cans are made in 1, 2, 3, 5 and 10 gallon sizes.

The Eureka Wood Jacket Shipping Cans.

The Reservoir Flower Pot.

McElhinney Mfg. Company, Nebraska City, Neb., are offering a flower pot with a reservoir for water, as illustrated herewith. The pot is made of metal, the upper part that receives the dirt and plant having a perforated bottom. This part fits into the base or reservoir, into which the water is put. It is explained that the plant takes up the water as needed, thus saving the time required for frequent watering. It is claimed that the pot does not leak or make a damp place where it stands; that it may be placed on window sills, and stands without taking off the paint or soiling the varnish; that it will not rust nor break; that it is neat and light, and that plants will thrive better and bloom longer in this pot. These are made in 4, 5 and 6 inch, and finished in a variety of colors and designs.

The Reservoir Flower Pot.

Keating Model B 1892.

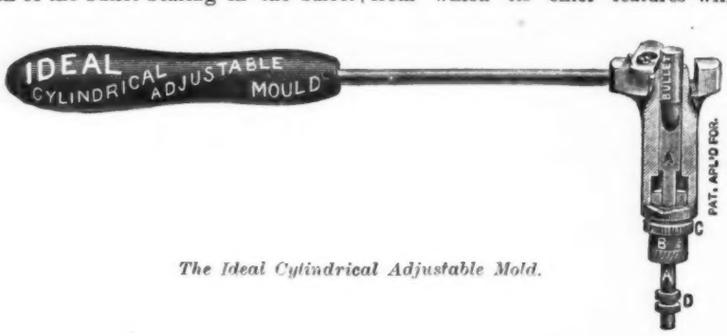
The Keating Wheel Company, Holyoke, Mass., are offering their model B, as shown in the accompanying illustration. This is their latest design and is intended to meet the demand for a light, strong, fast wheel. It has a diamond frame, with 28-inch

Keating Model B 1892.

wheels, geared regularly to 56 inches, although other gears will be furnished if desired without extra charge. The wheel weighs 29 pounds when stripped of all unnecessary parts. They are furnished with 1⅝ cushion, or 1¾ or 2 inch Tillinghost's pneumatic tires, detachable cranks with 6½ inch throw, single adjustment ball bearings, removable hardened bushings, Keating's Sure Grip or rat trap pedals, and direct plunger brake. The manufacturers guarantee this wheel in every respect.

The Ideal Cylindrical Adjustable Mold.

Ideal Mfg. Company, New Haven, Conn., have just perfected and are now putting on the market the above article, which is represented herewith. The manufacturers state that this mold, which is intended for patched bullets only is a true cylinder, and that there is no joint to loosen or division mark to form the bullet out of round. They also state that the adjustable former not only enables the user to get different lengths of bullets so he can vary the weight as is desired, but with it the bullets are pushed out of the mold, leaving them, it is claimed, perfectly true, without taper, and assuring the whole length of the bullet bearing in the barrel of the rifle, thus requiring not so much upsettage and obviating any chance of the bullet being started in a tipping or cross wise manner. In setting the mold the bushing B is screwed in, which will carry forward the former punch by the shoulder at A, which, when at the hight desired, is securely fastened with the check nut C. The check nut D is then adjusted at bottom of the former punch A A, so that the forward end of punch will slide up to within one-sixteenth of an inch of the face of the mold. This is referred to as enabling the user to push the bullet out of mold, should it not drop out when it is reversed. The check nuts should be set securely, to prevent the forward end of punch projecting beyond the face of the mold, as it might be injured if it came in contact with the cut off. These molds are furnished for the following calibers : 0.32, 0.38, 0.40 and 0.45.



The Ideal Cylindrical Adjustable Mold.

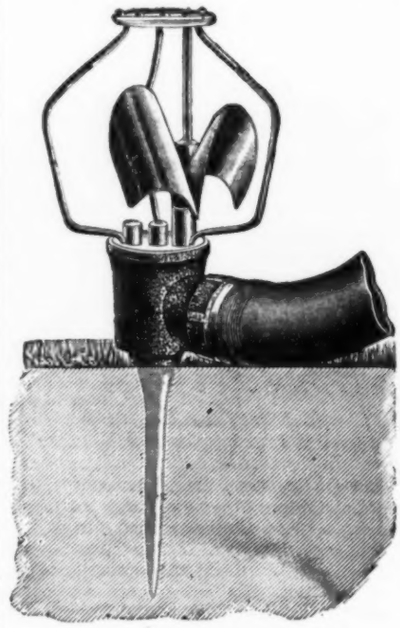
The Athol Hand Force Pump.

A new form of hand force pump that is claimed to be exceptionally strong and efficient has recently been put upon the market by the Athol Pump Company, Athol, Mass. A general view of the pump is shown in the accompanying illustration, from which its chief features will be readily understood. The pump is made of brass, with steel piston and iron foot plate, the suction nipple being threaded to fit a ¾-inch hose coupling and the discharge nipple threaded the same. The pump is useful for either fire purposes, in drawing water from wells or ponds, and is likewise used for sprinkling solutions from a pail or other receptacle and for all sprinkling purposes in the garden. It is also used for windmills, and, it is claimed, will force against a pressure of 150 pounds. The manufacturers refer to its efficiency for use in testing pipes, starting aqueducts, cleaning out drains and other purposes.

The Athol Hand Force Pump.

Bonnette's Arc Lawn Sprinkler.

The Bonnette Arc Lawn Sprinkler Company, Bay City, Mich., are introducing a sprinkler, as illustrated in the accompanying cut. The base is of cast iron, with a 4-inch pin for fastening it to the lawn, and a thread to which the hose coupling is fastened. A 1¼ inch metal circular piece is held in position 3½ inches from the top of the base by curved metal standards. This circular piece has three holes in it, one over each of the posts on the top of the base. The water strikes the wheel coming through the center post. The wheel which revolves is of sheet metal, is attached at the lower end to a short piece of tubing which revolves over one of the posts, and at the top to a slender shaft, the top of which revolves in one of the holes in the circular metal piece at the top. The whole is nicely nickel plated, and presents an attractive appearance. The prime feature of the sprinkler is the fact that, if desired, the water may be sprinkled in a half circle, which is referred to as convenient in sprinkling a lawn along the side of a walk. This is accomplished by placing the wheel on either of the side posts, and the shaft in the corresponding hole at the top, when the water will be thrown in a half circle on the opposite side from the post upon which it rests. This, it is stated, is an entirely new feature, never before introduced in a lawn sprinkler or water throwing device. The manufacturers claim that the sprinkler will not clog; that it will sprinkle a circle of 4 to 40 feet in diameter, according to the water pressure; that it distributes the water equally over the entire surface, wasting none around the base of the machine, and that it can be changed from a circle to a half circle, or *vice versa*, in five seconds. The sprinklers are packed one each in a box, and 12 or 24 boxes in a case.



Bonnette's Arc Lawn Sprinkler.

The Curley Corkscrew.

Empire Portable Forge Company, Lansingburg, N. Y., have recently commenced the manufacture of the Curley corkscrew, the handle and bell of which are in one piece. As will be observed from the company's advertisement in

this issue, this corkscrew has a steel twisted bit, made tapering and with gimlet point, which is inserted in a finely nickel-plated handle to which a bell-shaped piece is attached and loosely fitting the bit or screw. In the bell is a slot and through it a pin, causing it to revolve with the screw and twist the cork out of the bottle. The ease with which corks may be extracted with this corkscrew is specially mentioned by the manufacturers.

Hoit's Standard Wagon Jack.

Charles Morrill, World Building, New York, is offering this wagon jack, as illustrated herewith. It is made of malleable

Hoit's Standard Wagon Jack.

iron, compact and convenient, and works quickly under all hights of axles. It is described as light and strong, not liable to get out of order, not affected by the weather, and requiring no oiling. The jack is made in four sizes, adapted for light, medium and heavy carriages, trucks and wagons. It is stated that express companies regard them with especial favor.

Helicoid Shank Wood Screw.

Russell & Erwin Mfg. Company, New Britain, Conn., and New York, are introducing a screw with ribbed shank, as shown in the accompanying illustration. It has probably been the experience of every one who has put a screw into hard wood that the strain comes and the head is apt to split a little after the shank reaches the wood. The manufacturers claim that the ribs lessen the friction and

Helicoid Shank Wood Screw.

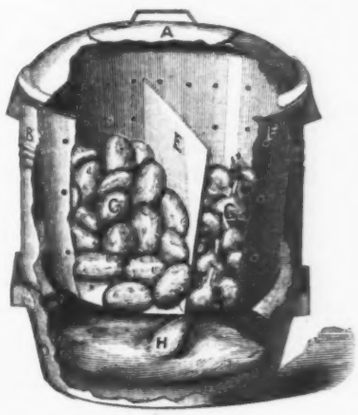
obviates the necessity of counterboring for the shank where driven in hard wood, as the ribs do that work; and that an exact fit is made in the operation of turning the screw into the wood. It is also pointed out that with this screw the strain upon the shank, slot and head is much less than in a regular screw while being rotated, and that the tendency to split the wood, mar the slot and break the head is thereby avoided. These screws are made in regular lengths and sizes.

The Boss Sprinkler.

Oliver A. Smith, Buchanan, Va., is manufacturing a knapsack sprayer for spraying shrubs and plants. The container is made in cylinder form, with attachments through which the arms are put, the can being carried against the back. Near the bottom of the can is a faucet, to which is attached a hose. To the other end of the hose is fastened a sprinkling rose, connected to which is a spring valve. By the use of this valve in the hand of the operater the water is allowed to pass through the rose, starting and stopping it at will. The sprinkler is designed to distribute paris green water on potato, cotton and tobacco plants. It is claimed that one can full of water and one teaspoonful of paris green will sprinkle between nine and ten hundred hills of potatoes; five cans full of water and five teaspoonfuls of paris green will sprinkle one acre of potatoes, three feet apart each way, thus making a saving in the amount of the paris green and water used.

Warren Steam Cooker.

Trumbull Specialty Company, Warren, Ohio, are introducing the Warren steam cooker, as illustrated herewith. Referring to the cut, B represents the outer jacket resting on the water pan D, with the tight-fitting cover A. The colander F receives the food to be cooked and is perforated on the sides and bottom to admit the steam. It is stated that the food, being thus enveloped in hot, dry steam, will be cooked quicker and more



Warren Steam Cooker.

thoroughly than by the old method. The removable partition E permits the steaming of two kinds of vegetables at the same time, and, it is stated, without danger of the flavor of one affecting the other. All joints are made tight so that the steam is condensed and returned to the water in the pan. If desired the cooker may be used with either an 8 or 9 inch kettle instead of water pan D. It is designed to cook meats and fowls, fruits, vegetables, oysters and cereals. It is referred to as saving time, labor and fuel, and as adapted to all kinds of gas, oil and vapor stoves.

New Model Spencer Repeating Shot Gun.

Hermann Boker & Co., 101 and 103 Duane street, New York, control the entire production of this gun. The magazine is located under the barrel and is made to hold five cartridges. The weight of the gun is from 7½ to 8½ pounds, only 12 gauge being made at present. Paper shells are used, loaded in the ordinary way. There is a supporting handle which slides back and forth on the magazine barrel. By sliding the supporting handle back and then forward, the exploded cartridge is ejected, a fresh cartridge is inserted ready for firing and the hammer automatically cocked. After loading the magazine with five cartridges, a sixth cartridge may be placed in the chamber of the barrel, thus providing for six shots. It is stated that six consecutive shots can be fired in three seconds without taking the gun from the shoulder.

CONTENTS.

CURRENT HARDWARE PRICES.

MAY 25, 1892.

Note.—The quotations given below represent the current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Adjusters, Blind.

Domestic.....₩ doz $3.00, 33⅓%
Excelsior.....₩ doz $10.00.....50&10&2%
North's .....list net @10%
Zimmerman's—See Fasteners Blind.

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils.—

Eagle Anvils, ₩ ℔ 10¢.....15@15&5%
Peter Wright's..... 11@11½¢
Armitage's Mouse Hole.....10½@11¢
Am. Wrought, Horseshoe brand.11@11½¢
Trenton.....10@10½¢
Wilkinson's.....10½@11¢
Moore & Barnes Mfg. Co.....33⅓%

Anvil Vise and Drill—

Millers Falls Co., $18.00.....20%
Chenev Anvil and Vise.....25%
Allen Anvil and Vise, $3.00.....40&10%
Star.....45&5%

Apple Parers—See Parers, Apple, &c.

Augers and Bits—

Douglass Mfg. Co.
Wm. A. Ives & Co.
Humphreysville Mfg. Co.
French, Swift & Co. (P. H. Beecher, P. S. & W. Co.
Rockford Bit Company
} 70&10@70 & 10&5%

Cook's, Douglass Mfg. Co.....55%
Cook's, N. H. Copper Co.50&10&50&10&5%
Ives' Circular Lip 60%
Patent Solid Head.....30%
C. E. Jennings & Co., No. 10, extension lip 40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₩ set, 33⅓% quarters, No. 5, $5; No. 30, $3.50.20%
Lewis' Patent Single Twist.....45%
Russell Jennings' Augers and Bits.25&10%
Imitation Jennings' Bits.....60@60&10%
Pugh's Black.....30%
Pugh's Jenning's Pattern.....4⅓
Car Bits.....60@60&10%
Car Bits, P. S. & W. Co.....60&10%
Snell's Car Bits.....60%
L Hommedieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....20%
Cincinnati Bell-Hangers' Bits....30&10%

Bit Stock Drills—

Morse Twist Drills .....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal .....50&10%
Syracuse, for wood (wood list).30@30&5%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%

Expansive Bits—

Clarks' small, $18; large, $26..35@35&10%
Ives' No. 4, ₩ doz $60.....40%
Swan's 40%
Steer's, No. 1, $26; No. 2, $22.....35%
Stearns' No. 2, $48.....20%

Gimlet Bits—

Common .....₩ gross $2.75@$3.25
Diamond.....₩ doz $1.25.....4 &10%
Bee.....25@25&5%
Double Cut, Shepardson's.....45@45&10%
Double Cut, Ct. Valley Mfg. Co ...30&10%
Double Cut, Hartwell's, ₩ gro.....$5.25
Double Cut, Douglass' .....40&10%
Double Cut, Ives'.....60@60&10%

Hollow Augers—

Ives
French, Swift & Co.
Douglass'
} 33⅓@ 33⅓&10%

Bonney's Adjustable, ₩ doz $48....40&10%
Stearns' .....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....30%
Wood's .....25@25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10@15&10&5%
Watrous'.....15&10@15&10&10%
Snell's .....15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10@5%

Awl Hafts—See Hafts, Awl.

Awls—

Awls, Sewing, Common .₩ gr. 85¢@90¢
Awls, Should. Peg.....₩ gr. $1.50@$1.55
Awls, Pat. Peg.....₩ gr. 35¢@$8¢
Awls, Shouldered Brad...₩ gr $1.30@1 40
Awls, Handled Brad...₩ gr.$2.50@$3.00
Awls, Handled Scratch..₩ gr.$4.00@4.50
Awls, Socket Scratch..₩ doz. $1.10@$1.20

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

	Plain.	Beveled.
First quality, best brands.	$7.00 @	$7.50
First qual., other brands	6.62½ @ 6.75	
Second quality	6.00	6.50

Axle Grease—See Grease, Axle.

Axles—

No. 1...3½@4½¢, No. 2, 5¢@6¢
Nos. 7 to 14.....60&10%
Nos. 15 to 18.....47½%
Nos. 19 to 22.....70%
} 3% cash

Concord Axles, loose collar.....2½¢@3¢
Concord Axles, solid collar.....5½¢@7¢
National Tubular Self-Oiling.....33⅓%@33⅓&5%

Bag Holders.—See Holders, Bag.

Balances—

Spring Balances 40%

	No. 2000	20	30
Chatillon, ₩ doz....	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire.—See Wire, Barb.

Bars.

Crow—

Cast Steel.....₩ ℔ 3½¢
Iron, Steel Points.....₩ ℔ 3¢

Basins, Wash—

Standard Fiberware, No. 1, 10½-inch, $2; 12-inch, $2.25; 13½-inch, $2.75; 15-inch, $3.25.

Beams, Scale—

Scale Beams, List Jan. 12, '82...50&10@ 50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—

Egg—

Dover.....₩ doz $1.50
Duplex (Standard Co.).....₩ doz $1.25
Rival (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.)..... ₩ doz $3.50
Bryant's.....₩ gro $14.00
Double (H. & R. Mfg. Co.), ₩ gro, No. 0, $12.00; No. 1, $15.00; No. 2.....$36.00
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Triple (H. & R. Mfg. Co.).....₩ gro $16.50
Spiral .....₩ gro $4.25 @ 4.50
Improved Acme (H. & R. Mfg. Co.)..... ₩ gro $9.00
Paine, Diehl & Co.'s.....₩ gro $24.00
Silver & Co .....₩ doz $5.50

Culinary—

Keystone, P.D.&C., Each, No. 1, $1; No. 2, $2.....20%

Bells—

Cow—

Common Wrought.....60&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Kentucky Durham .....70&10%
Dodge, Genuine Kentucky....70@70&10%
Texas Star.....50&10@50&10&5%

Door—

Gong, Abbe's.....33⅓&10%
Gong, Yankee.....15&10%
Gong, Barton's.....40&10@50%
Crank, Taylor's.....25&10%
Crank Brooks'.....50&10&2%
Crank Cone's..... 10%
Crank, Connel's .....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronsed or Plated....net
Lever, Taylor's Japanned .....25&10%
Lever, R. E. M. Co.'s.....50&10&2%
Pull, Brook's..... .....50&10&2%

Electric,

Wollensak's.....20%
Bigelow & Dowse.....20%
Taylor's 20%

Hand—

Light Brass.....70&10%
Extra Heavy 70%
White 70%
Silver Chime.....33⅓&10%
Globe Cone's Patent) .....25&10@35%

Miscellaneous—

Call.....40@40&5%
Farm Bells.....₩ ℔ 3¢@3½¢
Steel Alloy Church and School Bells..40%

Bellows—

Blacksmiths'..... 60&10@60&10&5%
Molders'.....40&10@50%
Hand Bellows..... .....40&10@50%

Belting, Rubber—

Common Standard.....70@10@75&5%
Standard.....70@5@70&10%
Extra .....60&10@60&10&5%
N.Y.B.&P.Co., Carbon.....60%
N.Y.B.&P.Co., Diamond..... .....50%
N.Y B.&P.Co., Para.....40%

Bench Stops—See Stops, Bench.

Benders and Upsetters, Tire.

Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Cleveland Block Co., Mal. Iron.50@50&10%
Moore's Novelty, Mal. Iron.....50%
Sure Grip Steel Tackle Blocks.....25%

Boards, Stove.

Wood Lined Crystal.....50%
Oxidized.....45%
Embossed.....50%
Paper Lined Zinc..... .....55%
Crystal.....55%
Embossed.....55%
New Tacoma.....55%

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84.....75&10&2%
Genuine Eagle, Norway, list Oct., '84... 80@80&10%
Phila. pattern, list Oct. 7, '84..75@75&10%
R.B.&W., old list 70%
Machine, list Jan. 1, 1890..... 80@80&5%
Bolt Ends, list Jan. 1, 1890..... 75&10@75&10&5%

Door and Shutter—

Cast Iron Barrel, Square, &c.....70&10%
Cast Iron Shutter Bolts.....70&10%
Cast Iron Chain (Sargent's list)...65&10%
Ives' Patent Door Bolts 60&10@60&10&5%
Wrought Barrel.....70@70&10%
Wrought Square.....70@70&10%
Wr't Shutter, all Iron, Stanley's 60&10%
Wr't Shutter, Brass Knob, ...40&10%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list....55&10%
Wr't Sunk Flush, Stanley's list....50&10%
Wr't R.K.Flush. Com'n, " ...55&10%

Stove and Plow—

Stove.....60%
Plow.....60&5%
R. B. & W., Plow.....55%

Tire—

Common, list Feb. 28, '83.....65%
Port Chester Bolt and Nut Company:
Empire. list Feb 28, '83.....65%
Keystone, Philadel., list Oct. '84....80%
Norway, Phila., list Oct. '84 .....75%
American Screw Company:
Norway, Phil., list Oct. 16, '84.....75%
Eagle, Phil., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
R.B.&W., Philadel., list Oct. 16, '84....80%

Borers, Tap.

Common and Ring.....20&10%
Ive's Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20&10&30%
Clark's.....33⅓@35%

Borax.....₩ ℔ 9½@10½¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon.

Per ℔.....2½¢

Braces.—

American Bit Brace Co.:
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5%
Ball Braces, net .....$1.12 to $1.25¢
Amidon's
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled....65&10@70%
Ratchet.....75&10@80%
Eclipse Rachet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10; 10 in.....$2.25
Buffalo Ball.....$1.10@$1.1
Barber's,
Nos. 10 to 16.....50@50&10%
Nos. 30 to 33.....50@50&10%
Nos. 40 to 63.....50&10@5&1o&5%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.15
Bartholomew's,
Nos. 28, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Pray's Genuine Spofford's. 50&5@50&10%
Fray's No. 70 to 130, $1 to 123, 207 to 414 .....50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barbers.....60&5%
Spofford.....60&5@60&10%
Osgood's Ratchet.....40&10@50%
P. S. & W. Co., Peck's Patent.....60%

Brackets—

Shelf, plain.
Regular list.....65@70%
Sargent's list.....66⅔@66⅔&10%
Shelf, fancy.
Sargent's list.....66⅔@66⅔&10%
Other makes at a wide range of prices.

Bright Wire Goods—See Wire.

Broilers—

Henis' Self- Basting.	Inch	9	10	9x11
	Per doz.	$4.50	5.50	6.50

New Haven.....50%
Wire Goods Co .....65&10%
Morgan Odorless.....₩ doz $12, 33⅓%

Buckets, Well.

Galvanized—

Hill's.....₩ doz, 12 qt, $4.25; 14 qt, $5.2
Iron Clad.....₩ doz. 14 qt, $4.25@$4.5
Helwig's Flat Iron Band.....$3.75
Helwig's Wired Top.....₩ doz $4.00

Bull Rings—See Rings, Bull.

Butchers' Cleavers—See Cleavers Butchers'.

Butts—

Brass—

Wrought Brass.....80@80&10%
Cast Brass, Tiebout's'.....50%
Cast Brass, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%

Cast Iron—

Fast Joint, Narrow.....50&10&5@50%
Fast Joint, Broad.....50&10@50%
Loose Joint.
Loose Joint, Japanned.
Loose Joint, Jap. with Acorns.
Parliament Butts.
Mayer's Hinges.
Loose Pin, Acorns.
Loose Pin, Acorns, Japanned...
Loose Pin, Acorns, Japanned, Plated Tips.
} .75@75 & 7½

Wrought Steel—

Fast Joint, Narrow.
Fast Joint, Lt. Narrow.
Fast Joint, Broad.
Loose Joint, Broad.
Table Butts, Back Flaps, &c ....
Inside Blind, Regular.
Inside Blind, Light.
Loose Pin.
} .70&10 @75%

Bronsed Wrought Butts.....50%

Calipers—See Compasses.

Calks, Toe—

Gautier, One Prong, Blunt.....5½@6¢
Burke's, One Prong, Blunt.....5½@6¢
Burke's, Two Prong, Blunt.....A7½@8¢
Burke's, One Prong, Sharp.....6½@7¢

Can Openers—See Openers Can.

Caps—

Percussion, ₩ 1000—

Hicks & Goldmark's and Union Metallic Cartridge Co.
F. L. Waterproof, 1-10's.....35@37¢
E. B. Trimmed Edge, 1-10's.....47@50¢
E. B. Grad. Edge, Cent. Fire, 1-10's.... 47@50¢
Musket Waterproof, 1-10's.....50@53¢
G. D.....27@30¢
A. B. Genuine Imported.....45¢
Eley's E. B.....56¢ @ 58¢
Eley's D Waterproof, Central Fire...$1.00

Primers—

Berdan Primers, $1.00.....2%
E. L. Caps (for Sturtevant Shells) $1.00. 2%
All other Primers, $1.20.....2%

Cards—List January 28, 1891.

Watson's Cotton, Wool, Horse and File. 35%

Carpet Stretchers—See Stretchers Carpet.

Carpet Sweepers—See Sweepers Carpet.

Cartridges—

Rim Fire Cartridges.....50&5&2%
Rim Fire Military.....15&2%
Cent. Fire, Pistol and Rifle.....35&5&2%
Cent. Fire, Military and Sporting 15&5&2%
Blank Cartridges, except 22 and 32 cal., additional 10% on above discounts.
Blank Cartridges .22 cal., $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Primed Shells and Bullets.....15&5&2%
E. B. Caps, Round Ball, $1.75.....2%
E. B. Caps, Con. Ball, Swgd., $2.00.....2%

Casters—

Bed.....
Plate.....
Shallow Socket.....
} Brass....55@55&10% Others...60@60&10%

Deep Socket.....40&10%
Yale Casters, list May, 1884...30&10@40%
Yale, Gem.....60@60&5%
Martin's Patent (Phoenix).....45&10@50%
Payson's Anti-friction.....70%
Payson's Truck.....60%
Giant Truck Casters.....30%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50%

Cattle Leaders—See Leaders, Cattle.

Cement.

Victor Elastic.....5 ℔ pails ₩ ℔ 5¢

Chain—

Trace, Wagon and Fancy Chains, List revised April 21, 1890.....60@ 60&10%

American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.60	5.45	4.45	3.80	3.65	3.50	3.40	3.35

Less than cask lots, add ½¢@1¢₩ ℔.
German Coil, list Oct. 6, 1890...60@60&5%
German Halter Chain, list Oct. 6, 1890 60@60&5%
Covert Halter.....60&2%
Covert Traces.....35@35%
Covert Heel Chain .....50&2%
Oneida Halter Chain.....60@60&5%
Galvanized Pump Chain.....₩ ℔ 5½¢@6¢
Jack Chain, Iron.....75&10@80%
Jack Chain, Brass.....75@75&10%

Chalk—

White, case lots, ₩ gr 50¢; small lots 55 @56¢
Red, case lots...₩ gr 67¢; small lots 77 @78¢
Blue, case lots...₩ gr 75¢; small lots 85¢
See also Crayons.

Chalk Lines—See Lines.

Chisels—

Socket Framing and Firmer.

P. S. & W.
New Haven.
Witherby.
Mix.
Ohio Tool Co.
} ..75 @ 75&10%

Douglass.....75@75&5%
Buck Bros.....30%
Merrill.....60&10@60&10&5%
L. & I. J. White.....30@30&5%

Tanged and Miscellaneous.

Tanged Firmers. .....40&10@50%
Butchers'.....$4.75@$5.00
Spear & Jackson's.....$5 to $
Buck Bros.....30%
Cold Chisels. ₩ ℔ .....15@10%

Chucks—

Beach Pat.....each, $3.00.....20%
Morse's Adjustable, each, $7.00, 20@30&5%
Danbury.....each, $6.00, 30@30&5%
Syracuse, Bals Pat.....25%
Graham Patent.....33⅓%
Skinner's Patent Chucks.
Combination Lathe Chucks.....33⅓%
Universal Lathe Chucks 40%
Independent Lathe Chucks.....40%
Drill Chucks.....15%
Union Mfg. Co.,
Victor.....$3.50, 25%
Combination.....40%
Universal.....40%
Independent.....40%

Churns.

Tiffin Union, each, 5 gal. $3.25; 7 gal. $3.75; 10 gal. $4.25.
McDermaid Star Barrel Churn, each 6 gal., $3.60; 10 gal., $2.75 15 gal. 3.00 20 gal., 3 25

Clamps—
R. I. Tool Co.'s Wrought Iron.....25%
Adjustable, Cincinnati.....15&10%
Adjustable, Hammers.....15%
Adjustable, Stearn's.....30&30&10%
Stearn's Adjustable Cabinet and Corner.....30&30&10%
Cabinet, Sargent's.....60&10%
Carriage Makers', Sargent's.....70&10%
Carriage Makers', P., S. & W. Co..40&10%
Carriage Makers', ...40&5&40&10%
Eberhard Mfg. Co.....40&5&40&10%
Warner's.....40&10&40&10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenters', Cincinnati.....25&10%

Cleavers.

Butchers'.
Bradley's.....35@30%
L. & I. J. White.....30&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co.'s.....40%
P., S. & W.....33⅓&5@33⅓&10%
Foster Bros.....30%
Schulte, Lohoff & Co.....40@40&5%

Clips—
Norway Axle, ¼ & 5-16.....55&5&5%
2nd grade Norway Axle, ¼ & 5-16 65&5%
Superior Axle Clips.....60%&5@70%
Norway Spring Bar Clips, 5-16..60&5&5%
Wrought-Iron Felloe Clips.....₩ ℔, 5½¢
Steel Felloe Clips.....₩ ℔, 6¢
Baker Axle Clips.....25%

Cloth and Netting, Wire—See Wire, &c.

Cockeyes.....50%

Cocks, Brass.
Hardware list.....50&2%

Coffee Mills—See Mills, Coffee

Collars, Dog, &c.
Medford Fancy Goods Co.....40&10%
Embossed, Gilt, Pope & Steven's list.....30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list.....40%
Chapman Mfg. Company.....50&10@50%

Combs, Curry.
Fitch's.....50&10@50&10&10%
Rubber, per doz $10.00.....30%
American Curry Comb Co.....Net prices

Compasses, Dividers, &c.—
Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s
Dividers.....60&5%
Compasses & Calipers.....50&5%
Wing and Inside or Outside.....50&5%
Double.....60%
(Call's Pat. Inside).....30%
Excelsior.....50%
J. Stevens & Co.'s.....25&10%
Starrett's
Spring Calipers and Dividers.....25&10%
Lock Calipers and Dividers.....25%
Combination Dividers.....25%

Coopers' Tools—See Tools, Coopers'.

Cord—
Sash.
Common.....₩ ℔, 10¢ @ 11¢
Patent, good quality.....₩ ℔, 12 @ 12¢
White Cotton Braided, fair.₩ ℔, 24¼@25¢
Common Russia Sash.....₩ ℔, 12½@13¢
Patent Russia Sash.....₩ ℔, 14¢
Cable Laid Italian Sash.....₩ ℔, 21@22¢
India Cable Laid Sash.....₩ ℔, 12¢
Silver Lake—
A Quality, White, 50¢.....25 %
A Quality, Drab, 55¢.....25 %
B Quality, White, 30¢.....10 %
B Quality, Drab, 35¢.....10 %
Sylvan Spring Extra Braided White,34¢
Sylvan Spring, Extra Braided, Drab..39¢
Semper Idem, Braided, White.....30¢
Egyptian, India Hemp, Braided.....26¢
Massachusetts, White.....26¢
Samson—
Braided, White Cotton, 50¢..30@30&5%
Braided, Drab Cotton, 55¢..30@30&5%
Braided, Italian Hemp, 55¢..30@30&5%
Braided, Linen, 80¢.....30@30&5%
Tate's Cotton Braided, White.₩ ℔, 28¢.10%

Wire Picture.
Braided or Twisted.....75&10%

Corkscrews—See Screws, Cork.

Corn Knives and Cutters—See Knives, Corn.

Crackers, Nut—
Table (H. & B. Mfg. Co.).....40%
Blake's Pattern.....₩ doz $2.00, 10%
Turner & Seymour Mfg. Co.....50%

Cradles—
Grain.....50&5&2@50&10&2%

Crayons.
White Crayons, ₩ gross.....10¢
D. M. Stewart Mfg. Co., Metal Workers, ₩ gr, $2.50.....25%
D. M. Stewart Mfg. Co., Rolling Mill, ₩ gr, $2.50.....25%
See also Chalk.

Crow Bars—See Bars, Crow.

Curry Combs—See Combs, Curry.

Curtain Pins—See Pins Curtain.

Cutters—
Meat.
Dixon's ₩ doz.....40&5%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Woodruff's ₩ doz.....40&5%

Nos.	100	150
	$15.00	$18.00

Hales Pattern ₩ doz.....70@70&5%

Nos.	11	12	13
	$27.00	$33.00	$45.00

American.....30%

Nos.	1	2	3	4	B	5
Each	$5	$7	$10	$25	$50	$60

terprise.....30%

Nos.	10	12	23	32	42
Each	$3	$2.50	$4	$6	$15

at American Meat Cutter.....30%

Nos.	112	116	118	120	122
Each	$2.00	$2.75	$3.00	$2.50	$4.00

Miles' Challenge ₩ doz.....45@45&10%

Nos.	1	2	3
	$22.00	$30.00	$40.00

Home No. .....₩ doz $26.00, 55&10%
Draw Cut, each:

Nos.	5	2	6	3
	$50	$75	$80	$225

.....20@25%
Beef Shavers (Enterprise).....20&10@30%
Little Giant (P. S. & W. Co.).....50%
Chadborn's Smoked Beef Cutter, ₩ doz $66.00

Tobacco.
Champion.....20&10@30%
All Iron.....₩ doz $4.25
Nashua Lock Co.'s..₩ doz, $18.00 50@55%
Wilson's.....55%
Sargents's.....₩ doz, $24, 55&10%
Acme.....₩ doz $20.00, 40%

Washer.
Smith's Pat.....₩ doz $12.00, 20&10&10%
Johnson's.....₩ doz $11.00, 33⅓%
Penny's ₩ doz Pol. $14; Jap'd, $16.00, 55%
Appleton's.....₩ doz $16.00, 60&10%
Bonney's.....30&10%
Cincinnati.....25&10%

Dampers, &c—
Dampers, Buffalo.....40&10%
Buffalo Damper Clips.....40&10%
Crown Damper.....40%
Excelsior.....40&10%

Diggers, Post Hole, &c.—
Samson Post Hole Digger, ₩ doz $36.00, 25%
Fletcher Post Hole Augers, ₩ doz $36, 20%
Eureka Diggers.....₩ doz $12.50@14.00
Leed's.....₩ doz $8.00@9.00
Vaughan's Post Hole Auger, ₩ doz $13.00@14.00
Kohler's Little Giant.....₩ doz. $18.00
Kohler's Hercules.....₩ doz. $15.00
Kohler' New Champion.....₩ doz. $9.00
Schniedler.....₩ doz. $18.00
Ryan's Post Hole Diggers..₩ doz $24.00
Cronk's Post Bars, ₩ doz $60.00, 50&5@50&10%
Gibbs Post Hole Digger.....₩ doz $15 00
Imperial.....₩ doz $7.50
Shimer's Hollow Handle, ₩ doz, $24..50%

Dividers—
See Compasses.

Dog Collars—See Collars, Dog, &c.

Door Springs—See Springs, Door.

Drawers.
Money, ₩ doz.....$15&$20

Drawing Knives—See Knives, Drawing.

Drills and Drill Stocks—
Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50,20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls.....each $3.00, 25%
Breast, Bartholomew's....each $2.50, 25&10@40%
Ratchet, Merrill's.....30@20&5%
Ratchet, Ingersoll s.....25%
Ratchet, Parker's.....20@20&5
Ratchet, Whitney's.....20&10%
Retchet, Weston's.....20@25%
Ratchet, Moore's Triple Action..25@30%
Ratchet, Curtis & Curtis.....30%
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools.....$1.75@$1.85

Twist Drills—
Cleveland.....50&10&5%
Diamond, W. & B.....50&10&5%
Graham's Pat. Groove Shank 50&10&5%
Morse.....50&10&5%
New Process.....50&10&5%
Standard.....50&10&5%
Syracuse (Metal list).....50&10%

Drill Bits or Bit Stock Drills—See Augers and Bits.

Drill Chucks.—See Chucks.

Dripping Pans—See Pans, Dripping.

Drivers, Screw.
Douglas Mfg. Co.....20@20&10%
Disston's.....50%
Buck Bros.....30%
Stanley R. & L. Co.'s
No. 64, Varnished Handles.....65&10%
No. 86.....70&10%
Sargent & Co.'s
No. 1 Forged Blade.....60&10&10%
Nos. 20, 30 and 60.....66⅔&10&10%
P. S. & W.....70 %
Knapp & Cowles:
No. 1.....60&20@70%
No. 2.....60&10&10@70&5%
No. 3.....60&25@60&10%
Nos. 4 and 00, Acme and Ideal..50&5@50&10&5%
Stearns'.....25&10&5%
Gay & Parsons.....25%
Champion.....25&10%
Clark's Pat.....30@33⅓%
Crawford's Adjustable.....30%
Ellrich's Socket and Ratchet..25@25&10%
Allard's Spiral, new list.....25%
Kolb's Common Sense ₩ doz $6.00,25&10%
Syracuse Screw-Driver Bits...30&30&5%
Screw-Driver Bits ₩ doz. 50@75¢
Screw-Driver Bits, Parr's.....₩ gro $6.25
Fray's Hol. Hdle. Sets. No. 3, $12.00, 25@25&10%
P. D. & Co.'s all Steel.....50%
Cincinnati.....25&10%
Brace Screw Drivers.....25&10%
Buck Bros.' Screw-Driver Bits.....

Egg Beaters.—See Beaters, Egg.

Egg Poachers.—See Poachers, Egg.

Electric Bell Sets.—See Bells, Electric.

Emery.—No. 4 to No. 54 to Flour, CF

	46 gr.	150 gr.	F. FF.
Kegs, ₩ ℔	4½¢	5 ¢	2½¢
½ kegs, ₩ ℔	4¾¢	5¼¢	2¾¢
¼ kegs, ₩ ℔	5 ¢	5½¢	3 ¢
10-℔ cans, 10 in case	6 ¢	6½¢	5 ¢
10-℔ cans, less than 10	10 ¢	10 ¢	

Enameled and Tinned Ware—See Ware, Hollow.

Escutcheon Pins—See Pins, Escutcheon.

Escutcheons.
Door Lock....Same dis as Door Locks.
Brass Thread.....60@60&10%
Wood.....25%

Expanded Metal.
List No. 5.
Lathing.....10%
Fencing, Painted Sheets.....20%
Netting, Painted Sheets.....20%
Door Mats, Galvanized.....25%
Window Guards, Paneled.....15%
Tree Guards, Paneled.....15%

Extractors, Lemon Juice—See Squeezers, Lemon.

Fasteners, Blind—
Mackrell's, ₩ doz. $1.00.....20@20&10%
Van Sand's Screw Pat., $15 ₩ gr..60&10%
Van Sand's Old Pat., $15.00 ₩ gr..55&10%
Austin & Eddy No. 2008 ₩ gr.....$4.00
Security Gravity, ₩ gr.....$9.00
Zimmerman's.....45 %

Faucets.—
Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33⅓%
Star.....60%
Frary's Pat. Petroleum.....40&5&2%
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list..50%
Metallic Key, Leather Lined....50&10@60&10&10%
Cork Lined.....70&5@70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl lots....50&10%
John Sommers'
Peerless Best Block Tin Key.....40%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self-Measuring
Enterprise, ₩ doz $36.00.....30&10%
Lane's, ₩ doz $36.00.....25&10%
Victor, ₩ doz $36.00.....25&10%

Felloe Plates—See Plates, Felloe.

Fifth Wheels.—
Deroy and Cincinnati.....45&5%
Brewster.....50&5%

Files—
Domestic—
Nicholson Files, Rasps, &c.....60&10@60&10&5%
Nicholson (X. F.) Files.....25%
Nicholson's Royal Files (Seconds).....75% (extra prices on certain elses)
G. & H. Barnett (Black Diamond).....60&10@60&10&5%
Arcade.....60&10@60&10&10%
Eagle.....60&10&5@60&10&10%
Other makers, best brands60&10@60&20%
Fair brands.....60&10&10@70&5%
Second quality.....70&10@75&10%
Heller's Horse Rasps.....50&7½@50&10%
McCaffrey's Horse Rasps.....50&10%
Chelsea Horse Rasps, Hand Cut...50&10%
Arcade Horse Rasps.....60&10%
Imported
Butcher.....Butcher's list, 20%
Stubs.....Stubs list, 25@30%

Fixtures.
Grindstone—
Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%
P., S. & W. Co.....50&10%

Fluting Machines—See Machines, Fluting.

Fluting Scissors—See Scissors, Fluting.

Fodder Squeezers—See Squeezers, Fodder.

Forks—
Hay, Manure, &c., Asso. List...70 &70&5%
Hay, Manure, &c., Philn. List,60@60&10%
Plated, see Spoons.

Frames—
Saw—
White Vermont.....₩ gro $9.00@10.00
Red, Polished and Varnished.....₩ doz $1.50, 25%
Screen, Window and Door—
Porter's Pat. Window and Door Frame. 33⅓&10%
Warner's Screen Corner Irons..33⅓@33⅓&10%
Stearns' Frames and Corners..25@25&10%
Cortland.....40@40&5%

Freezers, Ice Cream—
White Mountain.....60@60&5%
Granite State.....65@65&5%
Arctic.....70@70&5%
American.....60%
Buffalo Champion.....65@65&5%
Shepard's Lightning.....65@65&5%
Gem.....60%
Blizzard.....70%
Double Action Crown.....60%
Crown.....60%
Star.....60%
Peerless.....60&10%
Giant.....60%
Zero.....60&10&10%
Boss and Pet.....60&10&10&10%
Keystone, P. D. & Co., each $1.50.....20%

Fruit and Jelly Presses—See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Funnels.
Gersdorff's Perfection, Standard and Globe; Tin, 1 gro., 10 %; 2 to 5 gro., 20 %; 5 to 10 gro.....30 %
Copper, 1 to 6 doz., 15 %; 6 to 12 doz.,20 %; over 12 doz.....25 %

Furnaces, Soldering.
Burgess No. 3 Gem, tin reservoir....$7.00
Burgess No. Gem, copper reservoir 8.50
Fuse—Dis. 12½%. ₩ 1000 ft
Common Hemp Fuse, for dry ground.$2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground.. 3.85
Double Taped Fuse, for very wet gr.. 4.85
Triple Taped Fuse, for very wet gr.. 5.00
Small Gutta Percha Fuse, for water.. 7.50
Large Gutta Percha Fuse, for water.12.00

Gates, Molasses—
Stebbin's Pattern.....50@30&5%
Stebbin's Genuine.....60&10&10%
Stebbin's Tinned Ends.....40&10%
Chase's Hard Metal.....50&10%
Bush's.....30%
Lincoln's Pattern.....70@70&10%
Weed's.....30&10%
Boss, ₩ doz:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10.....60&10&10%

Gauges.
Marking, Mortise, &c.....50&10%
Starrett's Surface, Center and Scratch.....25&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge.....30&10%
Wire, Wheeler, Madden & Co.....10%
Wire, Morse's.....25%
Wire, Brown & Sharpe's.....10@30%
Wire, P. S. & W. Co.....10&10

Gimlets—
Nail and Spike.....50&10&5%
"Eureka" Gimlets.....40&10%
"Diamond" Gimlets.....₩ gr $5.00
Double Cut, Shepardson's.....45&15&5%
Double Cut, Ives'.....60@60&5%
Double Cut, Douglass'.....40&10%

Glue—
Le Page's Liquid.....25@25&5%
Upton's Liquid.....35%
Improved Process.....25@25&5%
Dodd's Liquid Glue.....25@25&5%

Glue Pots—See Pots, Glue.

Grease, Axle.
Fraser's.....Keg ₩ ℔ 4¢, Pail ₩ ℔ 5¢
Fraser's, in boxes.....₩ gr $2.50
Dixon's Everlasting, in bxs..₩ doz 1 ℔ $1.20; 2 ℔ $2.00
Dixon's Everlasting....10-℔ pails, ea. 85¢
Lower grades, special brands, ₩ gr $5.50@$7.00

Grindstones—
Small, at factory.....₩ ton $7.50@8.00
Family, regular list.....60%
Family, Cleveland Stone Co.....20 %

Grindstone Fixtures—See Fixtures Grindstone.

Gun Powder—See Powder.

Hack Saws—See Saws.

Hafts, Awl.
Sewing, Brass Fer.₩ gr, $3.50.....45&10%
Pat. Sewing, Short.$1.00 ₩ doz.....40&10%
Pat. Sewing, Long.....₩ doz $1.50
Pat. Peg, Plain Top.₩ gr $10.00...45&10%
Pat. Peg, Leather Top.₩ gr $12.00.45&10%

Halters.
Covert's, Rope, Jute.....60&10&10&2%
Covert's, Rope, 7-16-in., Jute.....70&2%
Covert's, Rope, ½-in. Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&2%
Covert's Jute Horse Ties.....70&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Adj. Web Halters.....35&5&2%
E. Covert Mfg. Co.'s Halters.....33⅓%
E. Covert Mfg. Co.'s Horse and Cattle Ties.....33⅓

Hammers—
Handled Hammers—
Maydole's, list Dec. 1, '85.....25&10@25%
Buffalo Hammer Co. / Humason & Beckley / Atha Tool Co. / Verree.....50@50&10%
C. Hammond & Son.....40&10@—%
Fayette R. Plumb.
Artisans' Choice, A. E. Nail..40&10%
Regular Y. & P., A. E. Nail.....50%
Horseshoe Turning Hammers.....50%
Other Hammers.....50&10%
Cheney's Claw.....40&10%
Cheney's Machinist's & Riveting.50&5%
Hartford, Nail Hammers.....40&5%
Hartford, Machinists, &c...50&5&50&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles.....20&2%
Peck, Stow & Wilcox.....33⅓&10%
Sargent's.....33⅓&10%
Heavy Hammers and Sledges—
3 ℔ and under.....₩ ℔ 40¢ / ₩ ℔ 36¢ / ₩ ℔ 30¢ } 70@70&10%
3 to 5 ℔.....₩ ℔ 30¢
Over 5 ℔.....10½@11½¢ ₩ ℔
Wilkinson's Smiths.....

Handcuffs and Leg Irons—See Police Goods,

Handles—
Cross-Cut Saw Handles—
Atkins' No. 1 Loop, ₩ pr., 28¢; No 3, 18¢; No. 6, 15¢; No. 2 and No. 4, Reversible, 18¢.
Champion.....18¢
Iron, Wrought or Cast—
Door or Thumb.

Nos.	0	1	2	3	4
Per doz.	$0.90	1.00	1.10	1.35	1.50

60&10&
doggin's Latches.....₩ doz 30¢@3e
Bronze Iron Drop Latches..₩ doz 70¢ n
Jap'd Store Door Handles—Nuts, $1.02 · 1 Plate, $1.10 ; no Plate, $0.88.....ne
barn Door, ₩ doz $1.40.....10&10%
Chest and Lifting.....70%
Wood—
Saw and Plane.....40&10@40&10&5
Hammer, Hatchet, Axe, &c... 40@40&5%
Brad Awl.....₩ gr $2.00
Hickory Firmer Chisel, ass'd.₩ gr 4.50
Hickory Firmer Chisel, large.₩ gr 5.00
Apple Firmer Chisel, ass'd...₩ gr 5.00
Apple Firmer Chisel, large...₩ gr 6.00
Socket Firmer Chisel, ass'd..₩ gr 3.00
Socket Framing Chisel, ass'd.₩ gr 5.00
I. B. Smith & Co.'s Pat File.....50
File, assorted.....₩ gr 2 75 / ₩ gr 5.00 } 50%
Auger, assorted.....
Auger, large.....₩ gr 7.00
Pat. Auger, Ives'.....30&1
Pat. Auger, Douglass.....₩ set $1.25
Pat. Auger, Swan's.....₩ set $1.00
Hoe, Rake, Shovel, &c.....50&10%

Hangers—

Barn Door, old patterns...60&10&10@70%
Barn Door, New England...60&10&10@70
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Wood Track.....55%
C. S. Wood Track.....55%
Champion.....60&10%
Rider and Wooster, Medina Mfg. Co.'s list.....70%
Ulimax Anti-Friction.....55%
Ulimax Anti-Friction for Wood Track55%
Zenith for Wood Track.....55%
Reed's Steel Arm.....50%
Challenge, Barn Door.....50%
Sterling.....50&50&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Cheritree.....50&10%
Kidder's.....40&10&60%
Boss.....60&10%
Best Anti-Friction.....60&10%
Duplex (Wood Track).....60&10&5%
Terry's Pat., ₱ dos pr. 4 in, $10.00; 5 in. $12.00.....50&10%
Terry's Steel Anti-Friction Leader 50&10%
Terry's Steel Anti-Friction Ideal..50&10%
Cronk's Patent, Steel Covered.....50&5%
Wood Track Iron Clad, ₱ ft. 10¢.....50 &15&60%
Carrier Steel Anti-Friction.....50&10%
Architect, ₱ set $6.00.....20%
Solipse.....20&10%
Felix, ₱ set $4.50.....20%
Richards'.....30@30&10%
Lane's Standard.....50&5&50&10%
Lane's New Standard.....50@50&5%
Lane's Parlor.....40%
Ball Bearing Door Hanger..20&10@25&10%
Warner's Pat.....20&10@20&10&10%
Stearns' Anti-Friction.20&10@20&10&10%
Stearns' Challenge.....25&10@25&10&10%
Faulkner.....40@40&5%
American, ₱ set $6.00.....20&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢.....40%
Paragon, Nos. 1, 2 and 3.....40&10%
Cincinnati.....25&10%
Paragon, Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel Cast Iron.....50%
Nickel, Malleable Iron and Steel 40%
Scranton Anti-Friction Single Strap33⅓%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00.....45%
Star.....40&10@40&10&5%
May.....50&5@50&10%
Barry, $6.00.....40&10%
Interstate.....50%
Magic.....45%
Pendulum, Payson's.....40%
Moody.....45%

Harness Snaps—See Snaps.

Hatchets—

American Axe and Tool Co.
Blood's
Hunt's
Hurd's
Mann's
Peck's
Underhill's
Buffalo Hammer Co.
Fayette R. Plumb.
C. Hammond & Son...
Kelly's.
Sargent & Co.
P., S. & W. Co.
Ten Eyck Edge Tool Co.
} 40 & 10 @ 60&5 %

Collins.....10%
Schulte, Lohoff & Co.....50@50&5%

Hay and Straw Knives—See Knives.

Hinges—

Blind Hinges—

Parker.....75&2%
Huffer.....50%
Clark's, Nos. 1, 3, 5, 40 and 50 75&10&5@80%
Clark's Mortise Gravity.....50%
Sargent's Nos. 1, 3, 5, 11, 13 75&10@55&10&5%
Sargent's, No. 12.....77&10&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible....70&10&5@75%
Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—

Western.....₱ dos $4.40, 60%
N. E.....₱ dos $7.00, 55%
N. E. Reversible.....₱ dos $5.20, 55&10%
Clark's, Nos. 1, 2, 3.....60&10&5%
N. Y. State.....₱ dos $5.00, 55&10%
Automatic.....₱ dos $12.50, 50%
Shepard's.....60&10&5%

Spring Hinges—

Geer's Spring and Blank Butts.....40%
Union Spring Hinge Co.'s list, March 1886.....2 %
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's.....30%
Buckman's.....15@20%
Chicago.....30%
Bardsley's Patent.....40%
Acme.....30%
U. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....55%
American, Gem, and Star.....20%
Oxford.....20%
Wiles'.....10%
Devore's.....40%
Rex.....40%
Royal.....60%
Reliable.....60%
Champion.....60%
Stearn's.....50&10%
Samson, ₱ gross.....$14.00
} Extra @10 % often given.

Wrought Iron Hinges.

List February 14, 1891.
Strap and T.....50&10 @ 5[illegible]&10&5%
Corrugated Strap & T. .....50@50&10%
Screw Hook and Strap { 6 to 12 in., ₱ D. 4¢ / 14 to 20 in., ₱ D. 3½¢ / 22 to 36 in., ₱ D. 3¢
Screw Hook and Eye.... { ⅝ in., ₱ D 7½¢ / ½ in., ₱ D 5½¢ / ⅜ in., ₱ D 4½¢
Rolled Blind Hinges, Nos. 32 and 34 .....50&10%
Rolled Blind Hinges, Nos. 232 and 234 .....55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10%
Plate Hinges { 8, 10 & 12 in., ₱ D.....5¢ / "Providence" { over 12 in., ₱ D.....4¢

Hoes—

Eye—

D. & H. Scovil.....30%
Lane's Crescent Planters Pattern..45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat. } 70@70& 5%
Am. Axe and Tool Co., S. & O. Pat.
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60&10%

Handled—

Garden, Mortar, &c.....70%
Planter's, Cotton &c.....70%
Warren Hoe.....60%
Magic.....₱ dos $4.00

Hog Rings and Ringers—See Rings and Ringers.

Hoisting Apparatus—See Machines, Hoisting.

Hollow-Ware—See Ware, Hollow.

Holders.

Bag.

Sprengle's Pat.....₱ dos $18.....60%

Bit.

Extension,
Barber's, ₱ dos $15.00.....40@40&10%
Ives, ₱ dos $20.00.....60&5@60&10%
Diagonal.....₱ dos $24.00, 40%
Angular.....₱ dos $24.00, 40&5%

File and Tool—

Bals Pat.....₱ dos $4.00; 25%
Nicholson File Holders.....30%
Dick's Tool Holder.....20%

Hooks—

Cast Iron—

Bird Cage, Sargent's list.....
Bird Cage, Reading.....
Clothes Line, Sargent's list..
Clothes Line, Reading list.
} 60&10&10%

60&10@60&10&10%
Ceiling Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading.50&10@50&10&10%

Wrought Iron—

Cotton.....₱ dos $1.25
Cotton Pat. (N. Y. Mallet & Handle W'ks). 30%
Tassel and Picture (T. & S. Mfg. Co.)...50%
Wrought Staples, Hooks, &c. See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April, 1886.....60@60&10%
Wire Coat and Hat, Miles, list April, 1886.....50@50&10%
Indestructible Coat and Hat..45@45&5%
Wire Coat and Hat, Standard.60@60&10%
Handy Hat and Coat.....50&10@60%
Steady Ceiling Hooks.....60&10@60%
Belt.....80@80&10%
Atlas, Coat and Hat.....60@60&10%
Bright Wire Goods, see *Wire.*

Miscellaneous.

Grass, No. 2, $2.00; No. 3, $2.25; No. 4, $2.50
Nolin's Grass.....₱ dos $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks.....See Bench Stops.

Horse Nails—See Nails, Horse.

Horse Shoes—See Shoes, Horse.

Hose, Rubber—

Competition.....75@75&10&5%
Standard.....60&10&10&70&10%
Extra.....60@60&10%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40@40&5%
N. Y. B. & P. Co., Dundee....50&10 @ 60%

Huskers—

Blair's Adjustable.....₱ gr $8.00
Blair's Adjustable Clipper....₱ gr 7.00
Hubbard's Solid Steel.....₱ gr 4.50

Indurated Fiber-Ware—See Ware, Indurated Fiber.—

Irons.

Sad—

From 4 to 10, at factory....₱ 100 lb. $2.30&$2.40
Self-Heating.....₱ dos $9.00 net
Self-Heating, Tailors'....₱ dos $18.00 net
Mrs. Pott's Irons.....60@60&10%
Enterprise Star Irons.....60@60&10%
XX Cold Handle Sad Iron.....50&5@60%
Ideal Irons new list.50&10@50 & 10&10%
Salamander, Irons.....25%
B. B. Sad Irons, ₱ lb.....3 @3½¢
Combined Fluter and Sad Iron, ₱ dos, $15.00.....15%
Fox Reversible, Self-Fluter ₱ dos $24.00
Chinese Laundry (N.E. Butt Co.) 8½¢, 15%
New England.....8¢, 15%
Mahony's Troy Pol. Irons.....25%
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓ %
National Self-Heating.....30 %

Soldering—

Soldering Coppers.....₱ D 19 @ 21¢
Covert's Adjustable, list Jan. 1 1886. 35&2%

Irons, Pinking, per dos., 65¢.

Jack Screws—See Screws.

Jacks, Wagon.

Daisy.....33⅓%
Victor.....33⅓%
Lockport.....40%

Kettles—

Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pid. W. M. list Jan. 1, '91.20%
Enameled and Tea—See Hollow Ware.

Keys—

Lock Asso'n list Dec. 30, 1886...50&10@ 60&5%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss, Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Ratchet Bed Keys.....₱ dos $4.00, 15%
Wollensak Tinned.....50&10%

Knife Sharpeners—See Sharpeners, Knife.

Knives.

Butcher, Shoe, &c—

Wilson's Butcher Knives, List Dec. 8, 1890.....25%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Jordan's AAA1, Butchers', list.....net
Nichols' Butcher Knives.....40&10%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Ames' Shoe Knives.....20@25%
Ames' Bread Knives. ₱ dos $1.50, 15@20%
Moran's Shoe and Bread.....20%
Hay and Straw.....See Hay Knives.
Table and Pocket.....See Cutlery.
Corn, Auburn Mfg. Co. Western Pat., $2.00
Corn, Auburn Mfg. Co. Crescent....$3.50

Corn—

Bradley's.....10%
Wadsworth's.....25%

Dracing—

Witherby
P. S. & W
Mix
New Haven
Merrill
} .75 @ 75&10 %

Douglas.....75@75&5%
Watrous.....15&10@25%
L. & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25@25&5%

Hay and Straw—

Lightning from jobbers....$8.00 @ $9.00
Wadsworth's.....40&7½@40&10%
Carter's Needle.....₱ dos $11.00@$11.50
Heath's.....₱ dos $13.00@13.50
Auburn Hay, Com. and Spear Point..50%
Auburn, Straw.....40%
Nolin's Hay.....₱ dos. $7.00 @ $8.00

Mincing.

Am. (3d quality), ₱ gr., 1 blade, $7; 2 blades, $12; 3 blades, $18.....net
Lothrop's.....20&10%
Smith's, ₱ dos, Single, $2.00; Double, $3 40@45%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable.....₱ dos $3.00 25%
Buffalo Double Adj'table. ₱ dos $3.00 25%

Knobs—

Door Mineral.....60@65%
Door Por. Jap'd.....70@75%
Door Por. Nickel.....$2.00@2.25
Door Por. Plated, Nickel.....$2.00@2.25
Drawer, Porcelain.....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885...40%
Furniture Plain.....75¢ gro inch, 10%
Furniture, Wood Screws.....25&10%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....₱ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c..40%

Ladies'—

Melting, Sargent's.....55&10%
Melting, Reading.....35&10%
Melting, Monroe's Pat....₱ dos $4.00, 40%
Melting, P. S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—

Tubular—

Plain with Guards, ₱ dos.....$3.75@4.00
Lift Wire, with Guards.....$4.00@4.25
Square Plain, with Guards....$3.75@4.00
Sq. Lift Wire, with Guards.....$4.50

Police Lanterns (including packages).

2¾-inch Bull's-eye Police regular. ₱ dos $3.60
3-inch Bull's-eye Police regular. ₱ dos $3.90
2¾-inch Bull's-eye Police flash light. ₱ dos $4.00
3-inch Bull's-eye Police flash light. ₱ dos $4.50

Lawn Mowers—See Mowers, Lawn.

Leaders, Cattle.

Humason, Beckley & Co.'s.....70%
Sargent's.....60&10&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—See Squeezers, Lemon.

Lifters, Transom.

Wollensak's:
Class 3 and 4, Bronzed Iron.....50%
Class 3 and 4, Bronze Metal.....25%
Class 3 and 4, Brass.....35%
Skylight Lifters.....35%
Crown, Eagle and Shield.....50%
Rether's, list Feb. 20, 1891.
Bronzed Iron Rods.....50&10&10&2%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&10 %
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60&10%
Imperial.....50&10%

Lines—

Cotton and Linen Fish, Draper's.....50%
Draper's and Tate's Chalk.....50%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....50%
Samson Cotton, No. 4, $2; No. 4½, $2.50; No. 5, $3.....10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gro.....25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50.
Mason's Colored Cotton.....40%
Wire Clothes.. Nos. 12 16 20
100 ft. $3.50 $3.00 $2.50
Ventilator Cord, Samson Braided, White or Drab Cotton..₱ dos $7.50, 20%

Links, Open.

Terry's—per gro.:
Nos..... 1 2 3 4
$6.00 8.00 12.00 16.00

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin, } List March, '84, rev Jan. 1, '85..33⅓&2%
Deits, Nos. 36 to 39.....40%
Deits, Nos. 51 to 63.....40&10%
Deits, Nos. 86 to 98.....30%
Stoddard Lock Co.....30&33⅓%
"Champion" Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&2%
"Champion" Cab. and Combin...33⅓%
Yale.....net prices
Romer's.....25%

Door Locks, Latches, &c.

R. & R. Mfg. Co., list Mar. 20, 1889.....65&10@70% Much lower net prices often made.
Mallory, Wheeler & Co., list July, '88.
Sargent & Co., list Aug. 1, '88
Reading Hardware Co., list Feb. 2 '88.
Branford Lock Works.....
Brittan, Granam & Mathes, list Jan. 1890.....60&10&10%
Perkins' Burglar Proof.....60&25%
Plate.....33⅓&2%
Barnes Mfg. Co.....40@40&10%
Yale.....net prices
Deits Flat Key.....30%
L. & C. Round Key Latches.....30&10%
L. & C. Flat Key Latches.....33⅓&10%
Romer's Night Latches.....15%
Brooklyn Latches.....50&10%
Shepardson or U. S.....35%
Seed's N. Y. Hasp Lock.....30%

Padlocks—

List June 10, 1891.....50&2%
Norwich Lock Mfg. Co., old list...70&2%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....25&2%
Eureka, Eagle Lock Co.....40&2%
Romer's, Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 505..15%
A. B. Deits.....40%
Champon Padlocks.....40%
Hotchkiss.....30%
Star.....60%
Horseshoe.....₱ dos, $9, 40@40&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Brown's Fat.....25%
Scandinavian.....90@90&10%
E. T. Fraim's Keystone Scandavian, Nos. 119, 120, 130 and 140.....90&10%
Other Nos.....65%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Slaymaker Barry & Co.
No. 1010 line.....35&5%
No. 41 line.....45&10%
No. 61 line.....50&5%
No. 21 line.....75%

Sash, &c.

Clark's, No. 1, $10; No. 2, $8 ₱ gr..33⅓%
Ferguson's.....33⅓%
Victor.....60&10&5%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓%
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'sed.....₱ gr $4.00
Common Sense, Nickel Plated ₱ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect.....60&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....35&5&2%
Stoddard "Practical".....10%
Ives' Patent.....60&10@60&10&5%
Fish (Lesche's pat.), No. 100, ₱ gr., $8; No 106, ₱ gr. $10.....40%
Davis, Bronze, Barnes Mfg. Co.....50%
Champion Safety, list January, 1889..70%
Security.....70%
Giant, list Jan., 1892.....70&5%

Lumber Tools—See Tools, Lumber

Lustre—

Four-ounce Bottles....₱ dos, $1.75; ₱ gross.....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.
Douglas	$5.50	$6.75	60%
Snell's, Mice's Pat.	5.50	6.75	40&10&10%
Jennings	5.50	6.75	45&45&10%
Other Machines	2.25	2.75	
Phillips' Patent with Augers	7.00	7.50	
Miller's Falls	7.50		35%

Fluting.

Knox, 4½-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Eagle, 3½-inch Roll, $2.15.....35%
Eagle, 5½-inch Roll, $2.85.....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each.....35%
Crown Jewel 6 in.....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal ₱ dos $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; $12.50; 3, $10.00.....30%
Shepard Hand Fluter, No. 55 ₱ dos 15 "s.....40%
Shepard Hand Fluter, No. 110 ₱ dos $11.00.....40%
Shepard Hand Fluter, No. 66 ₱ dos $8.00.....40%
Clark's Hand Fluter, ₱ dos $15.00.....35%
Combined Fluter and Sad Iron, ₱ dos $15.00.....30%
Buffalo.....₱ dos $10.00.....10%

Hoisting—

Moore's Hand Hoist, with Lock Brake.....30%
Moore's Differential Pulley Block....40%
Energy Mfg. Co's.....25%
Sure Grip Steel Tackle Blocks.....35%

Washing—

Anthony Wayne, ₱ dos No. 1, $51 No. 2, $45. No. 3 $42.
Western Star ₱ dos No. 2, $45; No. 3, $48
Weisel.....₱ dos $54.00
Fair and Square.....₱ dos $42.00

Mallets.
Hickory ..... 30&10@30&10&10%
Lignumvitæ ..... 30&10@30&10&10%
B. & L. Block Co., Hickory & L. V. 30@30&10%

Mattocks. Regular list. 60&10@60&10&5%

Measures—
Standard Fiberware, No. 1, peck, ₩ dozen, $4; ½-peck, $3.50.

Meat Cutters—See Cutters, Meat.

Menders, Harness—
Per doz. $2.00

Mills.
Coffee—
Box and Side, List Jan. 1, 1888. 60@60&10%
Net prices are often made which are lower than above discount.
American, Enterprise Mfg Co. 20&10@30%
The Swift, Lane Bros. ..... 20&10%

Mincing Knives—See Knives, Mincing.

Molasses Gates—See Gates, Molasses.

Money Drawers—See Drawers, Money.

Mowers, Lawn.
Philadelphia ..... 60&10%
Pennsylvania and Continental 40%
New Model and Excel lor 60@60&10%
Other Machines ..... 60&10&10&7½%

Muzzles—
Safety ..... ₩ doz, $3.00, 25%

Nails.
Cut and Wire. See Trade Report.
Wire Nails, Papered
Association list, Apr. 11, '92 80&10&10%
Tack Mfrs.' list ..... 70@70&10%
Wire Nails, Standard Penny.
Card June 1 '89 base. ..... $1.95 @ $2.00

Horse—

Nos.	6	7	8	9	10	
American	24	23½	23½	23½	23½	net
Ausable	28@	26@	25@	24@	23@	40&ba...
Clinton, Fin.	19@	17@	16@	15@	14@	30&10%
Essex	28@	26@	25@	24@	23@	40&10&5&2%
Lyra	19@	17@	16@	15@	14@	40&5%
Snowden	19@	17@	16@	15@	14@	40&5%
Putnam	23@	21@	20@	19@	18@	

1000 ₺ in year 15%
Vulcan ..... 23@ 21@ 20@ 19@ 18@ 25%
Northwest'n. 25@ 23@ 22@ 21@ 20@ 25@25&5%
A. C. ..... 25@ 23@ 22@ 21@ 21@ 25&10@33⅓&5%
C. B.-K. ..... 25@ 23@ 22@ 21@ 21@ 25&10@33⅓&5%
Maud S. ..... 25@ 23@ 22@ 21@ 21@ 40&10&5%
Champlain .. 28@ 26@ 25@ 24@ 23@ 40&5&5&2%
Saranac ..... 23@ 21@ 20@ 19@ 18@ ... 40&5%
Champion ... 25@ 23@ 22@ 21@ 20@ 40&10&10%
Capewell ..... 19@ 18@ 17@ 16@ 16@ 10%
Anchor ..... 23@ 21@ 20@ 19@ 18@ 35%
Western ..... 23@ 21@ 20@ 19@ 18@ ... 50%
Empire Bronsed. ..... 14 ₩ ₺.

Picture—
Brass Head, Sargent's list ... 50&10&10%
Brass Head, Combination list ... 50&10%
Porcelain Head, Sargent's list. 50&10&10%
Porcelain Head, Combination list. 40&10%
Niles' Patent 40%

Nail Pullers.—See Pullers, Nail.

Nail Sets.—See Sets, Nail.

Nut Crackers.—See Crackers, Nut.

Nuts—List Dec. 18, 1889.

	Square.	Hex.
Hot Pressed	5.85¢	5.95¢ off list.
Cold Punched	5.00¢	5.10¢ off list.

In packages of 100 ₺, add 1-10¢ ₩ ₺, net; in packages less than 100 ₺, add ½¢ ₩ ₺, net.

Oakum—
Best or Government .. ₩ ₺ 6¼@7¼¢
U. S. Navy ..... ₩ ₺ 6¾@6¢
Navy ..... ₩ ₺ 5¢@5¼¢

Oilers—
Zinc and Tin ..... 65&10@70&5%
Brass and Copper ..... 50&10@50&10&5%
Malleable, Hammers' improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₩ doz. 10&10&5%
Malleable, Hammers, Old Pattern, same list 40%
Prior's Pat. or "Paragon" Zinc, 60&10&10%
Prior's Pat. or "Paragon" Brass 50%
Olmstead's Tin and Zinc 60%
Olmstead's Brass and Copper 50%
Broughton's Zinc 60%
Broughton's Brass 50%
Gem P. D. & Co. ..... ₩ gro. $2
Steel, Draper and Williams 50%

Openers, Can.
Messenger's Comet ..... ₩ doz $3.00, 25%
American ..... ₩ gross $12.75@$13.00
Duplex ..... doz 25¢, 15@20%
Lyman's ..... ₩ doz $3.75, 30%
No. 4 French ..... ₩ doz $2.25, 55@60%
No. 5, Iron Handle ..... ₩ gr $6.00, 45@50%
Eureka ..... ₩ doz $2.50, 10%
Sardine Scissors ..... ₩ doz $2.75@3.00
Star ..... ₩ doz $2.75
Sprague, No. 1, $2.00; 2, $2.25; 3, $2.50- 50&10&10%
Excelsior No. 1 $2.50; No. 2, $1.50 ... 40%
World's Best, ₩ gross, No. 1, $12.00- No. 2, $24.00; No. 3, $36.00. ..... 50&10%
Universal, ₩ doz $3.00 ..... 55&5%
Domestic, ₩ doz $2.50 ..... 45%
Champion ₩ doz $2.00 ..... 50%

Packing, Steam—
Rubber—
Standard ..... 70@70&10%
Extra ..... 60@60&5%
N. Y. B. & P. Co., Standard 50%
N. Y. B. & P. Co., Empire 60%
N. Y. B. & P. Co., Salamander 25%
Jenkins' Standard. ₩ ₺ 80¢, ... 25@25&5%

Miscellaneous—
American Packing ..... 10¢@11¢ ₩ ₺
Russia Packing ..... 14¢ ₩ ₺
Italian Packing ..... 13¢@14¢ ₩ ₺
Cotton Packing ..... 15¢@17¢ ₩ ₺
Jute ..... 7¢@8¢ ₩ ₺

Pails.
Galvanized Iron—

Quarts	10	12	14
Hill's Light Weight, ₩ doz.	$2.75	3.00	3.25
Hill's Heavy Weight, ₩ dz.	3.00	3.25	3.75
Helwig's	2.50	2.75	3.00
Sidney Shepard & Co.	2.25	2.35	3.00
Iron Clad	2.50	2.75	3.00
Fire Buckets	2.75	3.25	3.50

Buckets, see Well Buckets.
Indurated Fibre Ware—25%
Star Pails, 12 qt ..... ₩ doz $5.40
Stable and Milk, 14 qt ..... ₩ doz $6.00
Fire Pails, deep ..... ₩ doz $5.40
" " round bottom .... ₩ doz $7.80
Standard Fibre Ware—

	Plain.	Deer'd
Water Pails, 12 qt., per doz.	$4.00	$4.50
Dairy Pails, 14 qt., per doz.	4.50	5.00
Fire Pails, No. 1, 12 qt. per doz	4.50	
Fire Pails, No. 2, 14 qt. per doz	5.00	
Sugar Pails	6.00	6.50
Horse Pails	5.00	
Buggy Pails	4.00	
Slop Jars (bal. trap)	8.00	9.00
Chamber Pails, 14-qt	6.50	7.50

Pans.
Dripping.
Smalls Ises ..... ₩ ₺ 6¼¢
Large sizes ..... ₩ ₺ 5½¢
Silver & Co. (Covered) 40%
Fry—
Standard List:

No.	0	1	2	3	4
	5	6	7	8	
₩ doz.	$3.00	$3.75	$4.25	$4.75	$5.25
No.	5	6	7	8	9
₩ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods ..... 75@75&10%
Acme Fry Pans ..... 60&10%

Paper and Cloth—
Sand and Emery—
List April 19, 1886 ..... 50@50&10%
Sibley's Emery and Crocus Cloth 30%

Parers.
Apple.
Advance ..... ₩ doz $4.75
Baldwin ..... ₩ doz 5.25
Bonanza ..... each 5.00
Daisy ..... ₩ doz 4.00
Dandy ..... each 7.50
Eclipse ..... ₩ doz 4.25
Eureka, 1888 ..... each 16.00
Family Bay State ..... ₩ doz 12.00
Favorite ..... ₩ doz 5.00
Gold Medal ..... ₩ doz 4.00
Ideal ..... ₩ doz 4.00
Improved Bay State .. ₩ doz $7.00 @ $9.00
Little Star ..... ₩ doz 4.50
Monarch ..... ₩ doz 13.50
New Lightning ..... ₩ doz 5.50
Oriole ..... ₩ doz 4.00
Penn ..... ₩ doz 4.00
Perfection ..... ₩ doz 4.00
Pomona ..... ₩ doz 4.00
Rocking Table ..... ₩ doz 6.00
Turn Table ..... ₩ doz 4.50
Victor ..... ₩ doz 13.50
Waverly ..... ₩ doz 4.00
White Mountain ..... ₩ doz 4.00
72 ..... ₩ doz 4.25
78 ..... ₩ doz. 7.00
Potato—
White Mountain ..... ₩ doz $4.50
Antrim Combination ..... ₩ doz $5.50
Hoosier ..... ₩ doz $13.50
Saratoga ..... ₩ doz $5.50

Pencils—
Faber's Carpenters' ..... high list 50%
Faber's Round Gilt ..... ₩ gro $5.25
Dixon's Lead ..... ₩ gro $4.50
Dixon's Lumber ..... ₩ gro $6.75
Dixon's Carpenters' 10%

Picks—
Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00 ..... 60&10@60&10&5%

Picture Nails.—See Nails, Picture.

Pinking Irons.—See Irons, Pinking.

Pins.
Bow—
Humason, Beckley & Co.'s ..... 60&10%
Sargent & Co.'s ... $17 and $18 ..... 60&10%
Peck, Stow & W Co. ... 50&10@50&10&5%
Curtain—
Silvered Glass ..... net
White Enamel ..... net
Escutcheon,
Iron, list Nov. 11, 1885 .. 50&10@50&10&5%
Brass ..... 60@60&5%

Pipe, Wrought Iron—
List September 18, 1889.
1¼ and under. Plain ..... 67&5@67&10%
1¼ and under, Galvanized. 50&5@5&10%
1½ and over, Plain ..... 70&5@70&10%
1½ and over, Galvanized. 60&5@60&10%
Boiler Tubes,
Sizes up to 2¾ in. inclusive ... 57½@60%
Sizes 3 in. and larger ..... 60@55%
Casing 55%
Inserted Joints Casing 50%
Steel Boiler Tubes 30%

Planes and Plane Irons—
Wood Planes—
Molding ..... 40&10%
Bench, First Quality ..... 50&10%
Bench, Second Quality ..... 55&10%
Bailey's (Stanley R. & L. Co.) ..... 50&10%
Iron Planes—
Bailey's (Stanley R. & L. Co.) ..... 50&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 25&10%
Steer's Iron Planes ..... 35&35&10%
Meriden Mal. Iron Co.'s ..... 50@40&10%
Davis's Iron Planes ..... 40@40&10%
Birmingham Plane Co. ..... 50@50&10%
Gage Tool Co.'s Self-Setting ... 20&10&10%
Chaplin's Iron Planes ..... 40@40&10%
Sargent's ..... 30&10@30&10&10%
Standard Tool Co. ..... 50@50&5%
Plane Irons—
Butcher's ..... $5.00@$5.25 to £
Buck Bros 30%
Auburn "Thistle" ..... 30&10%
Ohio ..... 30&10%
Sandusky ..... 30&10%
S. & I. J. White 25%
Stanley R. & L. Co ..... 50&10%

Planes.
Fellow ..... ₩ ₺ 6¢@6½¢

Pliers and Nippers.
Button's Patent ..... 50@50&10%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in $21.00 ₩ doz 40%
Humason & Beckley Mfg. Co. .. 50@50&10%
Lindsay's Giant 40%
Gas Pliers 60%
Gas Pliers, Custar's Nickel Plated .. 60&5%
Eureka Pliers and Nippers 40%
Russell's Parallel 25%
P. S. & W. Cast Steel 50%
P. S. & W. Tinners' Cutting Nippers, add 5% dis 10%
Carew's Pat. Wire Cutters 20%
Morrill's Parallel, ₩ doz, $12.00 ... 30&5%
Cronk's 8 in., $15.00; 10 in. $21.00, 5%@50&5%
Cronk's Button Pattern ..... 50@10&60%
Cronk's Carrier Pliers ..... 60@60&5%

Plumbs and Levels—
Regular List ..... 75&10@75&10&5%
Stanley's Duplex ..... 20@10%
Stanley's Handy ..... 20&10%
Disston's 50%
Pocket Levels ..... 70&10@70&10&10%
Davis Iron Levels 30%
Davis' Inclinometers ..... 10&10%

Poachers.
Egg.
Buffalo Steam Egg Poachers, ₩ doz, No. 1, $6.00; No. 2, $9.00 ..... 25%
Silver & Co., 6-Ring .. ₩ doz $4; 3-Ring $2

Pokes, Animal—
Bishop's I. X. L. ..... ₩ doz $6.00
Bishop's O. K. ..... ₩ doz $5.25
Bishop's Pioneer ..... ₩ doz $3.75
Bishop's American ..... ₩ doz $2.75
Eagle, Double Stale ..... ₩ doz $5.75
Eagle, Single Stale ..... ₩ doz $3.75
Buckeye, Single Stale ..... ₩ doz $2.75
Bo ding ..... ₩ doz $4.00

Police Goods.
R. I. Tool Co., Handcuffs, $15.00 ₩ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₩ doz 10%
Tower's 25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₩ doz $48.00; Nickeled, $57.00. 3 Hands, Polished, ₩ doz $72.00; Nickeled, $84.00 ..... 25%
J. P. Lovell's Police Goods 25%

Polish, Metal.
Prestoline 30%
Prestoline Paste 33⅓%
Gaston's Silver Compound 33⅓%

Polish, Stove.
Joseph Dixon's ..... ₩ gro $6.00, 10%
Gem ..... ₩ gro $4.50, 10%
Gold Medal ..... ₩ gro $6.00, 25%
Mirror ..... ₩ pro $6.00, —%
Lustro ..... ₩ gro $4.75
Ruby ..... ₩ gro $3.75
Rising Sun, 5 gro lots ..... ₩ gro $5.50
Dixon's Plumbago ..... ₩ ₺ 8¢
Boynton's Noon Day, ₩ gro 18.00
Parlor Pride Stove Enamel .. ₩ gro
Yates' Liquid, 2 3 5 10 gal....
₩ gal ... $0.80 .70 .60 .50
Yates Standard Paste Polish, 10-₺ cans, ₩ ₺ 12½¢
Jet Black ..... ₩ gro $3.50
Japanese ..... ₩ gro $3.50
Fireside ..... ₩ gro $2.50
Diamond O. K. Enamel ..... ₩ gro $19.00
Bonnell's Liquid Stove Polish. ₩ gro $9.00
Bonnell's Paste Stove Polish. ₩ gro $6.00
Black Eagle Bessine Paste, 5 and 10 ₺ cans ..... 12½¢
Black Jack Water Paste, 5 and 10 ₺ cans ..... 12½¢
Nickel Plate Paste ..... ₩ gro $6.00
Crown Paste ..... ₩ gross, $7.20
Crown Paste, in 5 and 10 ₺ pails ₩ ₺ 12¢
Black Flag ..... ₩ gross, $7.20
Black Flag, 5 and 10 ₺ pails .... ₩ ₺ 12¢
Black Flag, liquid, in bottles. ₩ gro. $8.00
Diamond Rock Nickel Cleaner .. ₩ gro $10.20

Poppers, Corn—
Round or Square, 1 qt .. ₩ gr $10.00@10.50
Round or Square, 1½ qt .. ₩ gr $15@15.50
Round or Square, 2 qt .. ₩ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—See Diggers, Post Hole, &c.

Potato Parers—See Parers, Potato.

Pots.
Glue—
Tinned ..... 40&10@40&10&5%
Enameled ..... 40&10@40&10&5%
Family, Howe's "Eureka" 40%
Family, L. F. C.'s "Handy" 50%

Powder.
In Canisters—
Fine sporting, 1 ₺ each $0.90
Duck 1 ₺ each ..... .60
Duck, ½ ₺ each ..... .40
Rifle, 1 ₺ each ..... .30
Rifle, ½ ₺ each ..... .18
In Kegs—
Rifle, 25-₺ kegs $5.50
Rifle, 12½-₺ kegs 3 00
Rifle, 6¼-₺ kegs 1.65
Duck, 12½-₺ kegs 5.75
Duck, 6¼-₺ kegs 3.00
Trap, 25-₺ kegs 6.50
Trap, 12½-₺ kegs 3.50
Trap, 6¼-₺ kegs 1.90

Presses.
Fruit and Jelly—
Enterprise Mfg. Co. ..... 20&10@30%
Henis ..... ₩ doz $3.50
Shepard's Queen City 40%
Silver & Co. ..... ₩ doz $2.75

Pruning Hooks and Shears.—See Shears.

Pullers.
Nail.
Scranton ..... ₩ doz $13.00, 33⅓%
Curtiss Hammer ..... ₩ doz $9.00
Giant, No. 1 ..... ₩ doz. $15.00, 10%
Giant, No. 2 ..... ₩ doz, $15.00, 10%
Pelican ..... ₩ doz, $9.00, 25%
Eclipse ..... each. $2.00 net
Economy ..... ₩ doz $6.00

Pulleys—
Hot House, Awning, &c. ..... 60&10%
Japanned Screw ..... 60&10%
Brass Screw ..... 60&10%
Japanned Side ..... 60&10%
Japanned Clothes Line ..... 60&10%
Empire Sash Pulley ..... 55&60%
Moore's Sash, Anti-Friction 50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50 ..... 50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in, Solid, $5.70 ..... 50%
Hay Fork, "P" Common and Pat. Bushed 20%
Hay Fork, Tarbox Pat. Iron 20%
Hay Fork, Reed's Self-Lubricating ... 60%
Shade Rack 45%
Tackle Blocks ..... See Blocks
Moore's Anti-Friction 5 in. Wheel, ₩ doz $12.00 ..... 40%

Pumps—
Cistern, Best Makers ..... 60@60&10%
Pitcher Spout, Best Makers .... 67½@70%
Pitcher Spout, Cheaper G'ds .. 75@75&10%

Punches—
Saddlers' or Drive, good, ₩ doz ... 60@65¢
Bemis & Call Co.'s Cast Steel Drive. 50&5%
Bemis & Call Co's Springfield Socket. 50&5%
Spring, good quality .... ₩ doz $2.50@3.00
Spring, Leach's Pat. 15%
Bemis & Call Co.'s Spring and Cheek .. 40%
Solid Tinners', P. S. & W. Co., ₩ doz $1.44, 5%
Tin'rs' Hollow Punches P. S. & W. Co. 30&2%
Rice Hand: unches 15%
Avery's Revolving 40%
Avery's Saw-Set and Punch. See Saw Sets.

Rail—
Sliding Door, Wr't Brass, ₩ ₺ 35¢ 15%
Sliding Door, Bronzed Wr't Iron .. ₩ ft. 7¢
Sliding Door Iron, Painted, ₩ foot 4¢, 40%
Barn Door Light Iron. ½ ⅝ ¾
Per 100 feet $2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—

	Small.	Med.	Large.
Per 100 set ...	$2.15	2.70	3.25 net

Terry's Steel Rail, ₩ foot ..... 1½¢
Victor Track Rail, 7¢ ₩ foot ..... 60&5%
Carrier, double braced, Steel Rail, ₩ foot ..... 4@4½¢
Moore's Wrought Iron 45%
Moody Steel Rail 45%

Razors—
Cast Steel, Association goods .. 66⅔@70%
Cast Steel, outside g'ds. 50&10&10@70&5%
Malleable ..... 70@70&5%
Gibbs Lawn Rake ..... ₩ doz $4.90
Canton Lawn Rake ..... ₩ doz $3.75
Favorite Lawn Rake ..... ₩ doz $4.40
Ft. Madison Prize Bow Brace and Peerless 60%
Fort Madison Steel Tooth Lawn Rake, $6.00 ..... 25%

Razors—
J. R. Torrey Razor Co 20%
Wostenholme and Butcher, $10 to $... 10%
Jordan's AAAI, new list ..... net
Jordan's Old Faithful, new list ..... net
Galvanic ..... ₩ doz $15.00
Electric Cutlery Co ..... Net

Razor Strops—See Strops, Razor.

Rings and Ringers.
Bull Rings—
Union Nut Co. 35%
Sargent's ..... 66⅔&10@70&5%
Hotchkiss' low list 30%
Humason, Beckley & Co.'s ..... 70&10%
Peck, Stow & W. Co's .. 50&10&10&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%
Hog—
Top of the Hill Ringers ..... ₩ doz $2.00
Top of the Hill Rings ..... ₩ doz $1.25
Hill's Improved Ringers ..... ₩ doz $1.25
Hill's Old Style Ringers ..... ₩ doz $1.12½
Hill's Tones ..... ₩ doz $3.00
Hill's Rings ..... ₩ doz bxs $1.00
Perfect Rings ..... ₩ doz bxs $1.50
Perfect Ringers ..... ₩ doz $2.15@$2.50
Blair's Hog Ringers ..... ₩ doz $2.00
Blair's Hog Rings ..... ₩ doz 90¢@$1.00
Champion Ringers ..... ₩ doz $2.00
Champion Rings, Double ..... ₩ doz $2.25
Brown's Ringers ..... ₩ doz $2.00
Brown's Rings ..... ₩ doz $1.15@1.25
Electric Hog Rings ... ₩ doz boxes $1.50
Electric Hog Ringers ..... ₩ doz $2.00
Major Rings ..... ₩ doz $1.25
Major Ringers ..... ₩ doz $2.00

Rivets and Burrs—
Iron, list Nov. 17, '87 ..... 40%
Copper ..... 60&10%
Copper and Iron, Bertina Brand 40%

Rivet Sets—See Sets.

Rods—
Stair, Brass ..... 25&2%
Stair, Black Walnut ..... ₩ doz 40¢

Rollers—
Barn Door, Sargent's list ..... 60&10&10%
Acme Moore's Anti-Friction 55%
Union Barn Door to Hay 30%
Thompson Mfg. Co.'s Lawn Rollers .. 30%

Rope.
Manila, 7-16 in. diam. and larger ₩ ₺ 12½¢
Manila ..... ¾ in. ₩ ₺ 12¾¢
Manila ..... ½ and 5-16 in. ₩ ₺ 13½¢
Manila Tarred Rope ..... ₩ ₺ 11½¢
Manila, Hay Rope ..... ₩ ₺ 12½¢
Sisal ..... 7-16 inch and larger ₩ ₺ 10½¢
Sisal ..... ¾ in. ₩ ₺ 10¾¢
Sisal ..... ½ and 5-16 in. ₩ ₺ 11½¢
Sisal, Hay Rope ..... ₩ ₺ 10½¢
Sisal, Tarred Rope ..... ₩ ₺ 9¾¢
Sisal, Medium Lath Yarn ..... ₩ ₺ 9¾¢
New Zealand ... 16 in. & larger ₩ ₺ 8¾¢
New Zealand ..... ¾ inch, ₩ ₺ 9¼¢
New Zealand, ½ and 5-16 inch, ₩ ₺ 9¾¢
New Zealand, Hay Rope ..... ₩ ₺ 8¾¢
New Zealand, Tarred Rope ... ₩ ₺ 8¼¢
Note.—Manufacturers' prices on above 1¢ ₩ ₺ less, f. o. b. factory—less 1½% for cash
Cotton Rope ..... ₩ ₺ 13½@16¢
Jute Rope ..... ₩ ₺ 6½@7¢
Wire—
List February, 1893.
All kinds 45%

Rules—
Boxwood ..... 80&10&10%
Ivory ..... 50@50&10%
Starrett's Rules and Straight Edges, Steel ..... 35&10%

Sad Irons—See Irons, Sad.

Sand and Emery Paper and Cloth—See Paper and Cloth, Sand and Emery

Sash Cord—See Cord, Sash.

Sash Locks—See Locks, Sash.

Sash Weights—See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.

Saws—The following prices are often cut by jobbers.
Disston's Circular ..... 45@45&5%
Disston's Cross Cuts ..... 45@45&5%
Disston's Hand ..... 30@20&5%
Woodrough & McFarlin.
Hand, Panel and Rip ..... 25@25&5%
Narrow Champion Cross Cuts with Handles, ₩ foot ..... 18@20¢
Champion Thin Back Cross Cuts, ₩ foot ..... 26@23¢
Champion Extra Thin Back Cross Cuts, ₩ foot ..... 29@31¢
One Man Champion Cross Cuts, ₩ foot ..... 37@40
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip ..... 30@30&5%
Narrow Champion Cross Cuts with Handles, ₩ foot ..... 18@20¢
Champion Thin Back Cross Cuts, ₩ foot ..... 26@23¢
Champion Extra Thin Back Cross Cuts, ₩ foot ..... 29@31¢
One Man Champion Cross Cuts, ₩ ft.. 37@40

Atkins' Circular Shingle & Heading..60%
Atkins' Silver Steel Diamond X Cuts
₱ foot 70¢
Atkins' Special Steel Dexter X Cuts
₱ foot 50¢
Atkins' Special Steel Diamond X Cuts
₱ foot 30¢
Atkins' Champion and Electric Tooth X Cuts..₱ foot 30¢
Atkins' Hollow Back X Cuts..₱ foot 20¢
Atkins' Mulay, Mill and Drag.....40%
Atkins' One-Man Saw, with handles,
₱ foot 40¢
Peace Circular and Mill.....45@45&5%
Peace Hand Panel and Rip....25@25&5%
Peace Cross Cuts.....45@45&5%
Richardson's Circular and Mill.45@45&5%
Richardson's X Cuts.....45@45&5%
Richardson's Hand, &c.....25@25&5%
C. E. Jennings & Co., Hand, Panel and Rip.....25@25&10%

Hack Saws—

Griffin's, complete.....40&10@50%
Griffin's Hack Saw, Blades....40&10@50%
Star Hack Saws and Blades.....25%
Eureka and Crescent.....25%

Scroll—

Lester, complete, $10.00.....25%
Rogers, complete, $4.00.....25%
Barnes' Builders' and Cab. Makers' $15.25%
Barnes' Scroll Saw Blades.....35%

Saw Frames—See Frames, Saw.
Saw Sets—See Sets, Saw.
Saw Tools—See Tools, Saw.

Scales—

Hatch, Counter, No. 171, good quality,
₱ dos $21.00
Hatch, Tea, No. 161....₱ dos $6.75@7.00
Union Platform, Plain.....$2.10@2.20
Union Platform, Striped.....$2.40@2.50
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Family, Turnbulls.....30@30&10%
Riehle Bros.' Platform.....40%
Scale Beams—See Beams, Scale
Scissors, Fluting.....45%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.)
$2.50.....30&10%
Box, 1 Handle.....₱ dos $4.00, 10%
Box, 2 Handle.....₱ dos $6.00, 10%
Defiance Box and Ship.....20&10%
Foot.....50&10@60%
Ship, Common.....₱ dos $3.50 net
Ship, R. I. Tool Co.....10%

Screen Window and Door Frames—See Frames.

Screw Drivers—See Drivers, Screw,

Screws.

Bench and Hand—

Bench, Iron.....55&10@55&10&10%
Bench, Wood, Beech.....₱ dos $3.25
Bench, Wood, Hickory.....20&10%
Hand, Wood.....25&10@25&10&5%
Hand, Grand Rapids, list.....5%
Lag, Blunt Point, list Jan. 1, 1890.75&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890.....75@75&10%
Bed.....25&5%
Hand Rail, Sargent's.....66⅔&10%
Hand Rail, H. & F Mfg. Co...70&10@75%
Hand Rail, Am. Screw Co.....75%
Jack Screws, Millers Falls list..50@50&5%
Jack Screws, P. S. & W.....35%
Jack Screws Sargent...60&10@60&10&5%
Jack Screws Stearns'.....40@40&10%

Cork—

Humason & Beckley Mfg. Co..40&10@50%
Williamson's.....33⅓@33⅓&5%
Howe Bros & Hulbert..35%

Machine—

Flat Head, Iron.....55%
Round Head, Iron.....50%

Wood—

List January 1, 1891.

Flat Head Iron	70	%
Round Head Iron	65	%
Flat Head Brass	70	%
Round Head Brass	65	%
Flat Head Bronze	70	%
Round Head Bronze	65	%
Rowers' Drive Screws	82½	%

Extra 10 @ 10&10% off ten gives.

Scroll Saws—See Saws, Scroll.

Scythes.

Grain.....40&5@40&10%
Grass.....40&10@50%

Scythe Snaths—See Snaths, Scythe

Sets.

Awl and Tool.

Aiken's Sets, Awls and Tools,
No. 20, ₱ dos $10.00.....55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9.....25@25&10%
Miller's Falls Adj. Tool Hdls.
Nos. 1, $12. 2, $18.....25%
Henry's Combination Haft...₱ dos $6.50
Stanley's Excelsior:
No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....30&10%
Common Brad Sets,
No. 42, $10.50; No. 43, $12.50..70&10&5%

Nail—

Square.....₱ gr., $4 00@$4.25
Round.....₱ gr. $3.25
Buck Bros.....27½%
Cannon's Diamond Point...₱ gr., $12, 20%

Rivet.

Regular list.....50&10%

Saw—

Stillman's Genuine...₱ dos $5.00@7.75, 40&5%
Stillman's Pattern, Hand, ₱ dos $3.25; Cross Cut, 5.25.....45@50%
Common Lever ...₱ dos $2.00, 45@50%
Morrill's No. 1 $12 00 .....40@40&5%
No. 11, $15.00....40&10@40&10%
No. 3 and 4, $18 00.....40&5%
No. c, $24.00 .....40&5%
Leach's. No. 0, $8.00; No. 1, $15, 15@20%
Nash's .....30&10@30&10&10
Hammer, Hotchkiss.....$5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. 30&5%
Bemis & Call Co.'s Lever and Spring Hammer.....30&5%
Bemis & Call Co.'s Plate.....10%
Bemis & Call Co.'s Cross Cut 12½%
Aiken's Genuine.....$13.00, 50&10@60%
Aiken's Imitation.....$7.00, 55&5%
Hart's Pat. Lever.....20%
Disston's Star.....25%
Leopold.....40&10@50%
Atkin's Lever.....₱ dos No. 1, $6.00
Atkin's Criterion.....₱ dos No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00.....40&10%
Avery's Saw Set and Punch.....50%
Chieftain Co.'s Superior.....₱ dos $7.00
Chieftain Co.'s Royal.....₱ dos $7.50
Crescent.....₱ dos $3.00
Lloyd's Acme.....₱ dos $15.00, 40&10%

Sharpeners, Knife.

Arkins.
Applewood Handles....₱ dos $6.00, 40%
Rosewood or Cocobo a. ₱ dos $900 40%

Shaves, Spoke

Iron.....45¢
Wood.....30%
Bailey's (Stanley R. & L. Co.).....40&10%
Stearns'.....30&10%
Cincinnati.....35&10%
Goodell's, ₱ dos $9.00.....25%

Shears—

American (Cast) Iron...75&10@75&10&5%
Barnard's Lamp Trimmers...₱ dos $3.75
Tinners'.....20&2%
Seymour's, List, Dec., 1881.
60&10&10@60&10&10&5%
Heinisch's, List, Dec., 1881.
60&10&10@60&10&10&5%
Heinisch's Tailor's Shears.....33⅓&5%
Cast Steel Trimmers:
First quality .....80@80&10%
Second quality.....80&10@80&10&10%
Acme Cast Shears.....10&10%
Diamond Cast Shears.....10%
Clipper.....10&10%
Victor Cast Shears.....75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel.....40%
Chicago Drop Forge & F. Co., Solid Steel Forged.....60%
Davenport Cutlery Co.....60@60&10%
Clauss Shear Co., Japanned.....70%
Clauss Shear Co., Nickeled, same list.60%
Galvanic, 3¼ to ₱ in, ₱ dos, $1.00 ₱ inch
Electric Cultery Co.....Net

Pruning Shears and Hooks.

Disston's Combined Pruning Hook and Saw.....₱ dos $18.00, 20&10%
Disston's Pruning Hook, ₱ dos $12.00, 20&10%
E. S. Lee & Co.'s Pruning Tools.....40%
Pruning Shears, Henry's Pat, ₱ dos $3.75@4.00
Henry's Pruning Shears, ₱ dos $4.25@4.50
Wheeler, M. & C. Co.'s Combination, ₱ dos $12.00, 20%
Dunlap's Saw and Chisel, ₱ dos $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2 7.25
P., S. & W. Co.....60%

Tinners', &c.—

Shears and Snips (P. S. & W.).....20@25%
Snips, J. Mallinson & Co.....33⅓&5%

Sheaves—

Sliding Door—

M. W. Co., list July, 1888..50&10@60&5%
R. & E., list Dec. 18, 1885.....55&20%
Corbin's list.....60&10&2%
Patent Roller.....60&10&2%
Patent Roller, Hatfield's.....75%
Russell's Anti-Friction, list Dec. 18, 1885.....60&2%
Moore's Anti-Friction.....50%

Sliding Shutter—

R. & E. list Dec. 18, 1885.....60&10&2%
Sargent's list.....60&10%
Reading list.....60&10&10%

Shells—

First quality 4, 8, 10 and 12 gauge
25&10&2%
First quality, 14, 16 and 20 gauge ($10 list).....30&10&2%
Prize.....40&2%
Star, Club, Rival and Climax brands, 33⅓&10&2%
Selbold's Comb. Shot Shells.....15&2%
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax..65&2%

Shells Loaded—

Standard List, July 19, 1890.....
40&10&10@40&10&10&5%

Ship Tools—

L. & I. J. White.....20&5%

Shoes, Horse, Mule, &c.—

Horse—

Burden's, Perkins', Phoenix and Bryden's Boss, at factory.....$4.00
Bryden's Frog Pressure, at factory.$5.00

Mule—

Add $1 ₱ keg to above prices.

Ox, Wrought—

Ton lots.....₱ ₺ 9¢
1000 ₺ lots.....₱ ₺ 9½¢
500 ₺ lots.....₱ ₺ 10¢

Shot—

	Ton lots	Small lots
Drop, up to B, 25-₺ bag	$1.30	$1.35
Drop, up to B, 5-₺ bag	.35	.35
Drop, B and larger, 25-₺ bag	1.55	1.60
Drop, B and larger 5-₺ bag	.40	.40
Buck and Chilled, 25-₺ bag	1.55	1.60
Buck and Chilled, 5-₺ bag	.40	.40
Dust Shot, 25-₺ bag	2.00	2.00
Dust Shot, 5-₺ bag	.45	.45

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1885.....20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron.....50&10%
Griffith's C. S.....50@60&10%
Griffith's Solid C. S. R. Goods.....20%
St. Louis Shovel Co.....20@20&7½%
Hussey, Binns & Co.....15@25%
Hubbard & Co.....20@20&7½%
Lehigh Mfg. Co.....50&10%
H. M. Myers Co.....30%
Payne Pettebone & Son.....33⅓&5%
Remington's (Lowman's Pat.)30&10@40%
Rowland's, Black Iron.....50&10%
Rowland's Steel.....60&5@60&10%
Terre Haute Shovel and Tool Co.....25%

Shovels and Tongs—

Iron Head.....60&10@60&10&5%
Brass Head.....60&10&10%

Sieves—

Mann's Tin Rim.....50&25%
Buffalo Metallic, S. S. & Co.....50&25%
Shaker (Barler's Pat.) Flour Sifters,
₱ dos $2.00; ₱ gr $21.60
Electric.....₱ gr $21.00
A. & W. Sifters.....₱ dos 2.00
Hunter's.....₱ dos $2.00

Sieves, Wooden Rim—

	Iron.	Plated
Mesh 18, Nested, ₱ dos..	80¢	$1.00
Mesh 20, Nested, ₱ dos..	95¢	1.10
Mesh 24, Nested, ₱ dos..	$1.15	1.25

Skeins, Thimble—

Western list.....75&5@75&10%
Columbus Wrt. Steel..Special net prices
Coldbrookdale Iron Co.....60%
Seneca Falls Pattern.....60%
Utica P. S. T. Skeins.....60%
Utica Turned and Fitted.....35%

Slates—

School, by case.....50&10@50&10&10%

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.).....65%
Fitch's (Bristol).....50&10%
Hotchkiss.....10%
Andrews.....50%
Sargent's Patent Guarded.....70&10&10%
German, new list.....40&10%
Covert.....50&10&5&2%
Covert, New Patent.....50&10&5&2%
Covert, New R. B.....60&10&5&2%
Covered Spring.....60&10&10%
E. Covert's Triumph.....33⅓&5

Snaths, Scythe.

List.....5C@50&5%

Soldering Irons—See Irons, Soldering.

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8¼-inch, ₱ dos., No. 5, $8; No. 5X $9.
Spittoons, Daisy, 8-inch, No. 1, $4; 10 and 11 inch, $6.

Spoke Shaves—See Shaves, Spoke.

Spoke Trimmers—See Trimmers, Spoke.

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list.....70&10%
Buffalo S. S. & Co.....33⅓&2%

Silver-Plated—(4 mos. or 5% cash 30 days).

Meriden Brit. Co., Rogers.....40&15%
C. Rogers & Bros.....40&15%
Rogers & Bro.....40&15%
Reed & Barton.....40@40&5%
Wm. Rogers Mfg. Co.....40, 15&5%
Simpson, Hall, Miller & Co.....40, 15&5%
Holmes & Edwards Silver Co...40, 15&5%
L. Boardman & Son.....50&12½%

Miscellaneous.

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver.....50&10&5%
No. 30 Silver Metal.....50&10&5%
No. 24 German Silver.....50&10&5%
No. 50 Nickel Silver.....50&5%
No. 49 Nickel Silver.....50&10&5%
Wm. Rogers Mfg. Co.
Rogers' Silver Metal.....50, 10&5%
18% Rogers' German Silver.....60&5%
22% Rogers' Nickel Silver. .....50&5%
German Silver.....50@50&5
German Silver, Hall & Elton..50&5% cash
Nickel Silver.....50&5@50&10&5% cash
Britannia.....60@60&5%
Boardman's N'ck'l Silver, list July 1, 1891 .....60&7½&5%
Boardman's Britannia Spoons, case lots.....60&5% cash

Springs—

Door.—

Torrey's Rod, 39 in.....₱ dos $1.20@1.25
Gray's, ₱ gr., $20.00..... 25%
Bee Rod ₱ gr., $20.00.....20@25%
Warner's No. 1, ₱ dos, $2.50; No. 2, $3.30.....50&50&5%
Gem (Coil), list April 19, 1886... 10@15%
Star (Coil), list April 19, 1886...20@2&5%
Victor (Coil) .....60&10@60&10&5%
Champion (Coil).....60&10@60&10&10%
Cowell's....No. 1, ₱ dos, $18.00; No. 2, $15.00.....50@50&10%
Rubber, complete, ₱ dos, $4.50...55&10%
Hercules.....50@50&10%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Half Scroll.....60&10&10%
Cliff's Bolster Springs.....25%

Squares—

Steel and Iron.....
Nickel-Plated.....
} .80&10@80&10&10%
Try Square and T Bevels...60&10@60&10&10%
Disston's Try Square and T Bevels.....50%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares.....25%
Avery's Flush Bevel Squares.....40%
Avery's Bevel Protractor 50%

Squeezers.

Fodder.—

Blair's.....₱ dos $2.00
Blair's "Climax".....₱ dos $1.25

Lemon—

Porcelain Lined, No. 1....₱ dos $6.00, 25&10%
Wood, No. 2.....₱ dos $3.00, 35%
Wood, Common.....₱ dos $1.70@1.75
Dunlap's Improved .....₱ dos $3.75, 20%
Sammis....No. 1, $5.00; No. 2, $9; 12, $18 ₱ dos.....25&10%
Jennings' Star.....₱ dos $3.50
The Boss.....₱ dos $2.50
Dean's..Nos. 1, ₱ dos $5.50; 2, $3.25; 3, $1.90; Queen, $2.50
Little Giant.....50&50&5%
King.....40&5%
Hotchkiss Straight Flash....₱ dos $12.00
Silver & Co., Glass.....₱ gro. $9.00
Manny Lemon Juice Extractor:
Standard.....₱ dos $0.75@$1.00
Improved.....₱ dos $2.00

Standard Fiber Ware—See Ware, Standard Fiber.

Staples.

Blind—

Barbed, ½ in. and larger.....₱ ₺ 7@7½¢
Barbed, ¾ in. .....₱ ₺ 8@8½¢
Fence staples, Galvanized. } Same price as B'rb Wire.
Fence Staples, Plain..... } See Trd. Rep.

Steelyards.....40&10@50%

Stocks and Dies—

Blacksmith's
Waterford Goods.....33⅓@40%
Butterfield's Goods.....33⅓@40%
Lightning Screw Plate.....35@35%
Reece's New Screw Plates....33⅓&5@40%
Reversible Ratchet.....30
Gardner.....35%

Stops, Bench.

Morrill's.....₱ dos $9.50%
Hotchkiss's.....₱ dos $5 10@10&10%
Weston's, No. 1, $10; No. 2, $9.25&10&5%
McGill's.....₱ dos $3.....10%
Cincinnati.....25&10%
Terrell's Nos. 1 and 2, ₱ dos., $3; No. 3, $3.60.....30%

Stone—

Scythe Stones.

Pike Mfg. Co. list Apl 11, 1892 .....23⅓%

Oil Stones, &c.

Pike Mfg. Co.:
Hindostan No. 1, 4@4½¢. Axe, 4@4½¢
Sand Stone.....₱ ₺ 3@3½¢
Washita Stone, Extra.....₱ ₺ 27@ 30¢
Washita Stone, No. 1.....₱ ₺ 22@24¢
Washita Stone, No. 2.....₱ ₺ 16@18¢
Washita Slips, No. 1, Extra.₱ ₺ 46@ 48¢
Washita Slips, No. 1.....₱ ₺ 40@44¢
Arkansas Stone, No. 1, 3 to 1¼ in.₱ ₺ 70 @ 1.85
Arkansas Stone, No. 1, 5½ to 8 in.₱ ₺ $1.75 @ 2.00
Turkey Oil Stone, 4 to 8 in. ₱ ₺ 5@18
Turkey Slips.....₱ ₺ $1.00@..20
Lake Superior, Chase.....₱ ₺ 13¢
Lake Superior Slips, Chase.... ₱ ₺ 20¢

Stove Polish—See Polish, Stove

Stretchers, Carpet.

Cast Steel, Polished.....₱ dos $2.25
Cast Iron, Steel Points.....₱ dos 80¢
Socket.....₱ dos $1.75
Gullard's.....25@25&10%

Strops, Razor—

Genuine Emerson.....60@60&5%
Imitation " ....₱ dos $2.00, 20&10&5%
Torrey's.....30%
Badger's Belt and Com.....₱ dos $3.00
Lamont Combination.....₱ dos $4.00
Jordan's Pat Padded, list Nov. 1, '89.50%
Electric Cultery Co.....Net

Stuffers or Fillers, Sausage—

Miles' "Challenge," ₱ dos $30, 50@50&5%
Ferry .....₱ dos, No. 1, $15.00; No. 0, $21.00.....50&5@50&10%
Draw Cut No. 4, each $30.00.....20%
Enterprise Mfg. Co.....20&10@30%
Silver's.....40&10%

Sweepers, Carpet and Lawn—

Carpet.

Bissell No. 0.....₱ dos $17.00
Bissell No. 8.....₱ dos $20.00
Bissell, Grand.....₱ dos $36.00
Stand rd .....₱ dos $24.00
Domestic .....₱ dos $21.00
Domestic, No. 2.....₱ dos $24.00
Grand Rapids.....₱ dos $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic.....₱ dos $15.00
Improved Parlor Queen,
Nickeled.....₱ dos $27.00
Japanned.....₱ dos $24.00
Excelsior .....₱ dos $22.00
Garland .....₱ dos $18.00
Parlor Queen.....₱ dos $24.00
Housewife's Delight.....₱ dos $15.00
Queen.....₱ dos $16.00
Queen, with band.....₱ dos $18.00
King .....₱ dos $30.00
Weed, Improved.....₱ dos $18.00
Hub.....₱ dos $16.00
Cog-Wheel.....₱ dos $16.00
Easy .....₱ dos $22.00
Monarch.....₱ dos $22.00
Goshen.....₱ doz $21.00
Ladies' Friend.....₱ dos $15.00
Advance .....₱ dos $18.00
Supreme .....₱ dos $22.00

Lawn.

Thompson Mfg. Co.....30%

Tacks, Brads, &c.—

List October 19, 1889. Old established straight Weights Short Weight goods are sold at lower prices.

Carpet Tacks—
American, Blued 72½%
American, Tin'd and Cop'd ..70%
Steel, Bright and Blued... 72½%
Steel, Tinned and Coppered .75%
Swedes Iron, Blued.....75%
Swedes Iron, Tinned..... 78¢
American Iron Tacks.....70&5%
Swedes Iron Tacks—
S. S., Blued.....71%
S. S., Tinned.....74%
Lanc., Blued.....60%
Lanc., Tinned.....63½%
Gimp and Lace Tacks—
S. S., Blued 67½%
S. S., Tinned.....71%
Lanc., Blued 60%
Lanc., Tinned.....63½%
Basket and Trimmers' Tacks—
Lanc 61½%
S. S.....59½%
Hungarian Nails.....65½%
Common and Patent Brads....6 %
Leathered Tacks.....80%
Brush Tacks.....63½%
Looking Glass Tacks.....35%
Picture-Frame Points.....43½%
Finishing Nails.....63½%
Trunk and Clout Nails—
Black 67½%
Tinned or Coppered..... 71%
Basket Nails 41½%
Chair Nails.....56½%
Cigar-Box Nails 52%
Tin Capped Nails.....50%

Miscellaneous—

D'ble-Point..120 count85&10@85&10&10%
Double Point, 100 count.....90%
Wire Carpet Nails .....50&10%
Plymouth Rock Steel Carpet Tacks..25%
Wire Brads and Nails, see Nails, Wire.
Steel-Wire Brads, R. & E. Mfg. Co.'s list .....50&10%

Extra discount 25&2½.

Tapes, Measuring—

American.....40@40&5%
Spring.....40%
Chesterman's, Regular list.....35@30%

Thermometers—

Tin Case.....80@80&10%

Thimble Skeins—See Skeins.

Ties, Bale—See Standard Wire, list.....50&10&5%

Tinners' Shears, &c.—See Shears Tinners', &c

Tinware—
Stamped, Japanned and Pieced, list Jan. 20 1887.....70&10@70&25%

Tire Benders, Upsetters, &c—
See Benders and Upsetters, Tire.

Tools.
Coopers'—
Bradley's.....20%
Barton's.....30@20&5%
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%
Beatty's.....20%
Sandusky Tool Co.....30@30&5%
Shaves, Cincinnati Tool Co.....20%

Lumber.
Ring Peavies, "Blue Line"...₩ doz $20.00
Ring Peavies, Common.....₩ doz $18.00
Steel Socket Peavies.....₩ doz $21.00
Mall. Iron Socket Peavies.....₩ doz $19.00
Cant Hooks, "Blue Line"..₩ doz $16.00
Cant Hooks, Common Finish..₩ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mall. Socked Clasp, Common Finish.....₩ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₩ doz $14.00
Cant Hooks, Clip Clasp, Common Finish.....₩ doz $12.00
Hand Spikes....₩ doz 6 ft., $15.00; 8 ft., $20.00

Pike Poles, Pike & Hook, ₩ doz., 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₩ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₩ doz, 12 ft. $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₩ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00
Swamp Hooks.....₩ doz $18.00

Saw.
Atkins' Perfection.....₩ doz $12.00
Atkins' Excelsior.....₩ doz $6.00
Atkins' Giant.....₩ doz $4.00

Tobacco Cutters—See Cutters, Tobacco.

Transom Lifters — See Lifters, Transom.

Traps—
Game—
Newhouse.....40@40&2%
Oneida Pattern.....70&10%
Game, Blake's Patent.....40&10&2%
Mouse and Rat—
Mouse Wood, Choker, ₩ doz holes, 9@10¢
Mouse, Round Wire.....₩ doz $1.50 10%
Mouse, Cage, Wire.....₩ doz $2.50, 10%
Mouse, Catch-'em-alive....₩ dz $2.50 15¢
Mouse. Bonanza.....₩ doz $0.90@$1.00
Rat, Decoy.....₩ gr $10.00, 10%
Ideal.....₩ gr $10.00
Cyclone.....₩ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₩ doz., 75¢; in full cases, ₩ doz. 60@65¢
Hotchkiss Imp. Rat Killer..₩ gro $18.50
Hotchkiss New Rat Killer...₩ gro $16.50
Schuyler's Rat Killer.....₩ gro $15.00

Triers—
Butter and cheese.....25%

Trimmers, Spoke.
Bonney's.....₩ doz $10.00, 50%
Stearns'.....30&10%
Ives', No. 1, $18.00; No. 2, $12.00 ₩ doz.
Douglas'.....₩ doz $9.00, 20%
Cincinnati.....55&10%
Cincinnati.....25%

Trowels—
Lothrop's Brick and Plastering.....20&10&5&25%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering..25@25&5%
Peace's Plastering.....25@45&5%
Clement & Maynard's.....20@20&5%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%
Cleves' Angle Trowel, ₩ gro. $15, net @10%

Trucks, Warehouse, &c.—
E. & L. Block Co.'s list, '92.....40¢
Thompson Mfg. Co.....25%

Tubes, Boiler—
See Pipe.

Twine—

Flax Twine—	BC.	B.
No. 9, ¼ and ⅛ ℔ Balls	25¢	31¢
No. 12, ¼ and ⅛ ℔ Balls	22¢	30¢
No. 18, ¼ and ⅛ ℔ Balls	20¢	29¢
No. 24, ¼ and ⅛ ℔ Balls	20¢	29¢
No. 36, ¼ and ⅛ ℔ Balls	18¢	28¢

No. 264, Mattrass, ¼ and ⅛ ℔ Balls 50@54¢
Chalk Line, Cotton, ⅛ ℔ Balls.....25¢
Mason Line, Linen, ⅛ ℔ Balls.....55¢
2-Ply Hemp, ¼ and ⅛ ℔ Balls (Spring Twine).....15¢
3-Ply Hemp, 1 ℔ Balls.....16¢@16¢
3-Ply Hemp, 1¼ ℔ Balls.....15¢@15¢
Cotton Wrapping, 5 Balls to ℔...15¢@16¢
2, 3, 4 and 5-Ply Jute, ⅛ ℔ Balls.....10¢
Wool.....6¢@6¢
Paper.....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz...18¢

Vises—
Solid Box.....50&10@50&10&5%
Parallel—
Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....40&10%
Millers Falls.....40@40&10%
Trenton.....40@5@40&10%
Merrill's.....15@20%
Sargent's.....60&10&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....20@25%
Simpson's Adjustable.....40%
Moore's.....20%
Massey Quick Action.....20 @ 25 %
Saw Filers—
Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Sargent's.....60%&10%
Hopkins'.....₩ doz $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%
Miscellaneous.
Combination Hand Vises.....₩ gr $42.00
Cowell Hand Vises.....20%
Bauer's Pipe Vises.....10¢
Cincinnati.....35&10%
Enterprise Pipe Vises, each.....$3.00
Massey Combination Pipe.....40 %

Wade—Price per M.

U.M.C.&W. R. A.—B. E., 11 up..	68¢
U.M.C.&W. R. A.—B. E., 9&10..	82¢
U.M.C.&W. R. A.—B. E., 8.....	96¢
U.M.C.&W.R.A.—B. E., 7.....	$1.10
U.M.C.&W. R. A.—P. E., 11 up..	1.15
U.M.C.&W. R. A.—P. E., 9&10..	1.50
U.M.C.&W. R. A.—P. E., 8.....	1.70
U.M.C.&W.R.A.—P. E., 7.....	1.80
Eley's B. E., 11 up.....	$1.70@$1.75
Eley's P. E., 11@10.....	3.00@ 3.25

Dis. 20&2

Wagon Boxes—See Boxes, Wagon.

Washer Cutters—See Cutters Washer.

Wagon Jacks—See Jacks, Wagon.

Ware, Hollow, Enameled, &c.
Cast Iron, Hollow—
Stove Hollow-Ware—
Ground.....60&10%
Unground.....60&10&10%
White Enameled-Ware—
Maslin Kettles.....75@75&5%
Boilers and Saucepans.....60@60&5%
Tinned Boilers and S'pans.....60@60&5%
Rustless Hollow-Ware.....50@50&5%
Gray Enameled-Ware—
Stove.....50%
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%
Enameled—
Agate and Granite Ware, list Jan. 1, 1889.....53⅓&10%
Ironclad Enameled Ware...dis 33⅓&10%
Kettles—
Galvanised Tea-Kettles—

Inch....	6	7	8	9
Each....	55¢	60¢		75¢

Standard Fiber—

	Per Dozen. Plain.	Dec'r'd
Wash-Basins, 10½ in.....	$2.00	$2.25
Wash-Basins, 12 in.....	2.25	2.75
Keelers, 11½ in.....		4.00
Cuspidors.....		3.00
Spittoons, "Daisy," 8 in....	4.00	4.50
Peck Measure.....	4.00	
Half-peck Measure.....	3.50	

See also Pails.
Indurated Fiber—25%
Spittoons, No. 2, ₩ doz.....$3.40
Basins, Ringed, ₩ doz., No. 2.....$3.00
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₩ nest.....$7.50
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₩ nest.....$2.90
Butter Bowls 15, 17 and 19-inch (3 pieces), ₩ nest.....$1.70
Liquid Measures, pt. qt., 2 qt. and funnell (4 pieces) ₩ set.....$1.60
See also Pails.
Silver Plated, Hollow—
4 mo. or 5 % cash in 30 days.

Reed & Barton.....	40&2%
Meriden Britannia Co.....	
Simpson, Hall, Miller & Co.....	
Rogers & Brother.....	
Hartford Silver Plate Co.....	40&2&2%
William Rogers Mfg. Co.....	

Washers—

Size hole.....	5-16	⅜	½	⅝ to 1⅜
Washers.....	6	5	3.50¢	3

In lots less than 200 ℔, ₩ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

Wedges—
Iron.....₩ ℔ 3½¢
Steel.....₩ ℔ 3½¢

Weights, Sash—
Solid Eyes.....₩ ton $18@$19

Well Buckets, Galvanized—See Buckets, Well, Galvanized.

Wheels, Well.
8 in., $2.25; 10 in., $2.70; 12 in., $3.20

Wire and Wire Goods—
Iron—
Market,
Br. & Ann., Nos. 0 to 18...75&10@80%
Cop'd, Nos. 0 to 18.....75&5@75&10%
Galv., Nos. 0 to 18.....70@70&10%
Tin'd, Tin'd list Nos. 0 to 18.70@70&10%
Stone,
Br. and Ann'd, Nos. 16 to 18.....80%
Bright and Ann'd, Nos. 19 to 26..80&5%
Br. and Ann'd, Nos. 27 to 36...82½&5%
Tinned.....
Tinned Broom Wire 18 to 21, ₩ ℔...4½¢
Galvanized Fence, Nos. 8 and 9..70&10%
Brass, list Jan. 18, 1884.....25@33⅓%
Copper, list Jan. 18, 1884.....33⅓@40%
Annealed Wire on Spools.....60%
Malin's Steel and Tin'd on Spools.....60%
Malin's Brass and Cop. on Spools.....50%
Tate's Spooled, Tin'd & Annealed..63&5%
Tate's Spooled Cop. and Brass.....50%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to $, 30%
Steel Music Wire, 12 to 30...60@70¢ ₩ ℔
Wire Clothes Lines, see Lines.
Wire Picture Cord see cord.

Bright Wire Goods—
Standard list.....35%

Wire Cloth and Netting.
Painted Screen Cloth, good quality ₩ 100 sq. ft., $1.40
Galvanized Wire Netting.....70&10@75%

Wire, Barb.—Prices unsettled. See Trade Report.

Wire Rope—See Rope, Wire.

Wrenches—
American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....40&10@50%
Coes' Genuine.....50&3%
Coes' "Mechanics'".....50&10&3%
Girard Standard.....65&10%
Lamson & Sessions' Engineers'..60&10%
Lamson & Sessions' Standard....70&10%
P. S. & W. Agricultural.... } 75&10@
Girard Agricultural..... }
Lamson & Sessions' Agric'l.. } 75&10&10%
Bemis & Call's
Pat. Combination.....35%
Merrick's Pattern.....35%
Brigg's Pattern.....35%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....40&10%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ doz $4.00, 40%
Webster's Pat. Combination.....35%
Boardman's.....30&10%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....30&10%
Acme, Bright.....50&3%
Acme, Nickeled.....40&3%
Hercules.....70@70&5%
Walker's.....60&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....35&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes—
Am. Wringer Co.'s list, July 15, '91..3% cash
Colby Wringer Co., list Sept. 1, '91..2% cash
Lovell Mfg. Co., list Jan. 1, 1892..2 % cash
Peerless Mfg. Co., list Feb., 1892..2% cash

Wrought Goods—
Staples, Hooks, &c., list March 17, 1892, 80&25%

PAINTS, OILS AND COLORS.—Wholesale Prices.

Animal and Vegetable Oils.

Linseed, City, raw..per gal.	40	@	..
Linseed, City, boiled.....	43	@	..
Linseed, Western, raw.....	39	@	..
Lard, City, Extra Winter..	57	@	58
Lard, City, Prime.....	56	@	57
Lard, City, Extra No. 1....	44	@	45
Lard, City, No. 1.....	40	@	42
Lard, Western, prime.....	55	@	56
Cotton-seed, Crude, prime.	29	@	..
Cotton-seed, Crude, off grades.....	26	@	27½
Cotton-seed, Summer Yellow, prime.....	..	@	32
Cotton-seed, Summer Yellow, off grades.....	29	@	31
Sperm, Crude.....	68	@	..
Sperm, Natural Spring.....	67	@	70
Sperm, Bleached Spring....	72	@	75
Sperm, Natural Winter.....	73	@	76
Sperm, Bleached Winter...	78	@	81
Whale, Crude.....	..	@	45
Whale, Natural Winter.....	54	@	55
Whale, Bleached Winter....	57	@	58
Whale, Extra Bleached.....	59	@	60
Sea Elephant, Bleached Winter.....	62	@	63
Menhaden, Crude, Sound...	..	@	31
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed..	37	@	..
Menhaden, Bleached W'ter.	38	@	..
Menhaden, Extra Bleached	40	@	42
Tallow, City, prime.....	44	@	45
Tallow, Western, prime....	42¼@		43
Cocoanut, Ceylon.....	5¼@		5¼
Cocoanut, Cochin.....	6	@	6¼
Cod, Domestic	38	@	40
Cod, Foreign.....	43	@	45
Red Elaine.....	34	@	36
Red Saponified.....₩ ℔	4½@		5
Bank.....per gal	35	@	36
Straits.....	36	@	37
Olive, Italian, bbls.....	60	@	62
Neatsfoot, prime.....	50	@	60
Palm, prime, Lagos....₩ ℔	6	@	6¼

Mineral Oils.

Black, 29 gravity, 25 @ 30 cold test.....per gal	7	@	7½
Black, 29 gravity, 15 cold test.....	7½@		8
Black, 29 gravity, summer	6	@	6½
Cylinder light filtered....	14	@	16
Cylinder, dark, filtered	10	@	13
Paraffine, 23½ @ 24 gravity.	11½@		12
Paraffine, 25 gravity.....	10½@		11
Paraffine, 28 gravity.....	8	@	8½
Paraffine, red, 23½@24 gr'ty	10½@		11

Paints and Colors.

Barytes, Foreign, ₩ ton.	$22.00	@	$24.00
Barytes, Amer. floated...	20.00	@	25.00
Barytes, Amer. No. 1....	15.00	@	17.00
Barytes, Amer. No. 2....	13.00	@	16.00
Barytes, Amer., No. 3....	11.00	@	12.00
Blue, Celestial.....₩ ℔	6	@	8
Blue, Chinese	40	@	50
Blue Prussian.....	25	@	40
Blue, Ultramarine	8	@	25
Brown, Spanish	½@		1
Brown, Vandyke, Amer....	3	@	5
Brown, Vandyke, English	6	@	8
Carmine, No. 40, in bulk.	3.10	@	..
Carmine, No. 40, in boxes or barrels	3.20	@	.
Carmine, No. 40, in ounce bottles.....	4.20	@	
Chalk, in bulk.... ₩ ton.	1.75	@	2.00
Chalk, in bbls..₩ 100 ℔.	33	@	40
China Clay, English ..... ₩ ton.	13.00	@	18.00
Cobalt Oxide, prep'd....	9.00	@	11.00
Cobalt Oxide, black.. .... lots 100℔.	3.50	@	....
Cobalt, Oxide, black ..... less 100℔	2.65	@	2.90
Green, Paris, in bulk....	13	@	15½
Green Paris, 170 @ 175 ℔ kegs.....	14	@	16
Green, Paris, small pack.	15½@		22
Green, Chrome, ordinary	6	@	12
Green, Chrome, pure....	22	@	25
Lead, Eng., B.B. white....	8½@		10
Lead, Amn. White, dry or in oil: Kegs, lots less than 500 ℔....	7¼	@	7¾
Kegs, lots 500 ℔ to 5 tons....	6¾	@	7
Kegs, lots 5 tons to 12 tons..	6¾	@	6¾
Kegs, lots 12 tons and over..	6¼	@	6¾
Lead White in oil 25 ℔ tin pails add to keg price.....		@	⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price		@	¼
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.		@	2½
Lead, Red, bbls. and ½ bbls....	6¼	@	7½
Lead Red, kegs.....	6¾	@	7½
Litharge, kegs.....	6½	@	7½
Litharge, bbls. and ½ bbls.....	6¾	@	7¼

Terms, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 3½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle.....	1.35	@	1½
Ocher, French Washed.....	1½@		2½
Ocher, German Washed....	1½@		3
Ocher, American.....	½@		1½
Orange Mineral, English..	8½@		9
Orange Mineral, French....	10	@	10½
Orange Mineral, German ..	8½@		09
Orange Mineral, American.	8½@		8¾
Paris White, English Cliff-stone.....	1.00	@	1.15
Paris White, American.....	70	@	75
Red, Indian, English.....	5½@		7
Red, Indian, American....	2	@	6¼
Red, Turkey.....	9	@	14
Red, Tuscan	9	@	11
Red, Venetian, American..			
Red, Venetian, English.. ₩ 100 ℔.	1.00	@	1.10
	1.30	@	1.35
Sienna, Italian, Burnt and Powd.₩ ℔	4	@	5
Sienna, Ital., Burnt Lumps	1½@		3½
Sienna, Ital., Raw, Powd..	4½@		5½
Sienna, Ital., Raw Lumps..	1½@		3½
Sienna, American, Raw....	1½@		1¾
Sienna, American, Burnt and Powdered.....	1¼@		1¾
Talc, French.....	1½@		1½
Talc, American.....	0½@		1½
Terra Alba, Fr'ch. ₩ 100 ℔	75	@	80
Terra Alba, English	70	@	75
Terra Alba, American No. 1	70	@	75
Terra Alba, American No. 2	45	@	50
Umber, Turkey, Bnt. and Powd..... ₩ ℔	3½@		4
Umber, Turkey Bnt. Ln	2½@		3
Umber, Turkey, Raw and Powdered.....	3½@		
Umber, Turkey, R'w Lmps	2½@		2¾
Umber, Turkey, Bnt. Amer.	1½@		1½
Umber, Turkey, R'w Amer.	1½@		1¾
Yellow, Chrome.....	10	@	25
Vermillion Americ. Lead..	11½@		17
Vermillion, Quicks'er, bulk.	57	@	..
Vermillion, Quicks'er, bags.	58	@	..
Vermillion Quicksilver, smaller pkgs.....	62	@	..
Vermillion English Import	85	@	90
Vermillion, Imitation, Eng.	8	@	35
Vermillion, Trieste.....	90	@	92½
Vermillion, Chinese.....	92½@		94
Whiting, Common. ₩ 100 ℔	35	@	45
Whiting, Gilders'.....	50	@	60
Zinc, American, dry....₩ ℔	4½@		5
Zinc, French, Red Seal....	..	@	5½
Zinc, French, Green Seal..	..	@	5½
Zinc, French, V. M. X.....	..	@	7
Zinc, Antwerp, Red Seal....	..	@	7½
Zinc, Antwerp, Green Seal	..	@	8½
Zinc, German, L. Z. O....	..	@	6½
Zinc, V M. in Poppy Oil, G. Seal, lots of 1 ton and over.....	10½@		11¼
lots less than 1 ton	11	@	11¼
Zinc, V. M. in Poppy Oil, Red Seal,.....	..	@	..
lots of 1 ton and over....	10	@	10¼
Lots of less than 1 ton....	10¼@		10¾

Discounts.—French Zinc.—Discounts to buyers of 10- bbl. lots of one or assorted grades, 1 %; 25 bbls., 2 %, 50 bbls., 4 %. No discount allowed on less than bbl. lots.

Colors in Oil.

Black, Drop, Frankfort	25	@	30
Black, Drop, English.....	12	@	15
Black, Drop, Domestic	7	@	10
Black, Lampblack, Best....	20	@	35
Black, Lampblack, Common	7	@	18
Black, Ivory.....	8	@	15
Blue, Chinese.....	35	@	40
Blue, Prussian.....	20	@	45
Blue, Ultramarine.....	12	@	13
Brown, Vandyke.....	7	@	13
Green, Chrome.....	8	@	13
Green, Paris.....	16	@	18½
Sienna, Raw.....	7	@	14
Sienna, Burnt.....	7	@	14
Umber Raw.....	7	@	10
Umber, Burnt	7	@	10

Putty.

In barrels and ½ bbls....	.01¾@		.01¾
In tubs.....	.01¾@		.01¾
In tin cans.....	.01¾@		.02¼
In bladders.....	.01¾@		.02¼

Spirits Turpentine.

In regular bbls.....	31	@	..
In machine bbls.....	31½@		..

Glue.

Low Grade.....₩ ℔	8	@	10
Cabinet.....	12	@	14
Medium White.....	13	@	15
Extra White.....	17	@	20
French.....	10	@	22
English.....	10	@	15
Irish.....	10	@	

CURRENT METAL PRICES.

MAY 25, 1892.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports

IRON AND STEEL.

Bar Iron from Store.

Common Iron:	
⅜ to 2 in. round and square.. 1 to 6 in. x ⅜ to 1 in...	₩ lb 1.90 @ 2.00¢
Refined Iron:	
⅜ to 2 in. round and square. 1 to 4 in. x ⅜ to 1½ in.... 4½ to 6 in. x ⅜ to 1 in.	₩ lb 2.00 @ 2.20¢
1 to 6 in. x ¼ and 5-16	₩ lb 2.20 @ 2.40¢
Rods—⅝ and 11-16 round and sq.	₩ lb 2.10 @ 2.30¢
Bands—1 to 6 x 3-16 to No. 12	₩ lb 2.30 @ 2.50¢
"Burden Best" Iron, base price.	₩ lb .... 3.00¢
Burden's "H. B. & S." Iron, base price	₩ lb 2.80¢
"Ulster"	₩ lb 3.00¢
Norway Bars	3.75 @ 4.00¢
Norway Shapes	4.50 @ 5.00¢

Merchant Steel from Store.

	Per pound
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2¾¢
Best Cast Steel, base price in small lots.	8 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Sheet Iron from Store.

Black.

	Common American.	R. G. Cleaned American.
Nos. 10 to 16	₩ lb 3 @	3½¢
17 to 20	₩ lb 3¼ @	3¾¢
21 to 24	₩ lb 3¼ @	3¾¢
25 and 26	₩ lb 3⅜ @	3¾¢
27	₩ lb 3½ @	3⅞¢
28	₩ lb 3⅝ @	4 ¢
American B. B.	₩ lb 4¢ @ 4½¢	

Galvanized Sheet Iron.

	B. B.	2d qual
Nos. 10 to 16	₩ lb 4.20¢	4 ¢
17 to 22	₩ lb 4.60¢	4.30¢
23 to 24	₩ lb 4.90¢	4.70¢
25 to 26	₩ lb 5.30¢	5 ¢
27	₩ lb 5.60¢	5.30¢
28	₩ lb 6 ¢	5.70¢
29 to 30	₩ lb 7 ¢	6.70¢
Genuine Russia, according to assortment	₩ lb 11¼¢ @ 11½¢	
Patent Planished	₩ lb A, 10¢; B, 9¢	
Craig Polished Sheet Steel	₩ lb, 8½¢	

English Steel from Store.

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged. Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 12 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12½¢
R. Mushet's "Special"	₩ lb 48 ¢
" " "Titanic"	₩ lb 20 ¢

METALS.

Tin.

	Per lb
Banca, Pigs	22¼ @ ..¢
Straits, Pigs	22 @ ..¢
Straits in Bars	..22¢

Tin Plates.

Duty: 2.2 cents per pound.

Charcoal Plates.—Bright.

Guaranteed Plates command special prices, according to quality. Per box.

Melyn and Calland Grade.	IC, 10	x14..	@ $6.50
" " "	IC, 12	x12..	@ 6.75
" " "	IC, 14	x20..	@ 6.50
" " "	IC, 20	x28..	@ 13.00
" " "	IX, 10	x14..	@ 8.50
" " "	IX, 12	x12..	@ 8.75
" " "	IX, 14	x20..	@ 8.50
" " "	IX, 20	x28..	@ 17.00
" " "	DC, 12½	x17..	@ 6.00
" " "	DX 12½	x17..	@ 8.00
Allaway Grade	IC, 10	x14..	@ 6.00
" "	IC, 12	x12..	@ 6.25
" "	IC, 14	x20..	@ 6.00
" "	IC, 20	x28..	@ 12.00
" "	IX, 10	x14..	@ 7.50
" "	IX, 12	x12..	@ 7.75
" "	IX, 14	x20..	@ 7.50
" "	IX, 20	x28..	@ 15.00
" "	DC, 12½	x17.	@ 5.50
" "	DX, 12½	x17..	@ 7.00

Coke Plates.—Bright.

Steel Coke.—IC, 10 x 14, 14 x 20	$5.70	@ $5.75
10 x 20	..	@ 8.50
20 x 28	11.50	@ 12.00
IX, 10 x 14, 14 x 20	....	@ 7.00
BV Grade.—IC, 10 x 14, 14 x 20	....	@ 5.75

Charcoal Plates.—Terne.

Guaranteed Plates command special prices according to quality.

Dean Grade.—IC, 14 x 20	....	@ $5.75
20 x 28	....	@ 11.00
IX, 14 x 20	....	@ 6.50
20 x 28	....	@ 13.00
Abecarne Grade.—IC, 14 x 20	....	@ 5 65
20 x 28	10.75	@ 11.00
IX 14 x 20	..	@ 6 50
20 x 28	....	@ 13 00

Tin Boiler Plates.

IX, 14 x 28.....112 sheets	@ $13.38
IXX, 14 x 28.....112 sheets	@ 14.00
IXX 14 x 31.....112 sheets	@ 16.00

Copper.

Duty: Pig, Bar and Ingot, 1½¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35 % ad valorem.

Ingot

Lake	12½ @ 13 ¢
Ansonia Grade Arizona	@ 12½¢
Ansonia Grade Casting	@ 12 ¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, December 5, 1890. Subject to a discount of 10 % @ 20 %, according to size of order.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
31	72		22	22	22	23	24	25	28	30
30		72	22½	22	22	23	25	27	31	...
36	96		22	22	22	24	26	30	33	....
36		96	22	22	23	25	27	31	35	....
48	96		22	22	24	26	28	32	....	....
48		96	22	22	25	27	29	33	....	....
60	96		22	22	25	27	29	34	....	....
60		96	22	23	28	....	....	....	....	....
84	96		23	24	....	....	....	....	....	....
84		96	24	25	....	....	....	....	....	....
Over 84 in. wide			25	27	....	....	....	....	....	....

Bolt Copper, ⅝ inch diameter and over, per pound..... 22¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.

Cold or Hard Rolled Copper lighter than 14 oz. ₩ square foot, 2¢ ₩ lb over the foregoing prices.

Copper Bottoms, Pits and Flats.

	Per pound
14 ounce to square foot and heavier	26¢
12 ounce and up to 14 ounce to square foot	27¢
10 ounce and up to 12 ounce	29¢
Lighter than 10 ounce	32¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms

10 % @ 20 % discount, according to size of order.

Copper Wash Boul Bottoms.

Tinned ₩ lb 34¢, 10% @ 20 %

Tinning.

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each	3¢
Tinning sheets on one side, 30 x 60 each	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each	12¢
Tinning sheets on one side, other sizes, per square foot	3½¢
For tinning both sides double the above prices.	

Planished Brass and Copper.

Not larger than 30 x 60.

16 oz. and heavier	24¢ ₩ lb
14 oz.	25¢ ₩ lb
12 oz.	27¢ ₩ lb

Seamless Brass Tubes.

Net.

Dec. 16, 1891.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1¼
8-14	6-12	30	26	23	22	21	20	17
15	13	31	26	24	23	22	21	18
16	14	32	27	25	24	23	22	18
17	15	33	28	26	25	24	23	19
18	16	35	29	27	25	24	23	20
19	17	36	30	28	27	26	25	22
20	18-19	37	32	30	29	28	27	24
21	20	39	34	32	31	30	29	27
22	21	41	35	34	32	31	30	29
23	22	43	37	35	34	33	32	32
24	23	46	39	37	36	34	33	34
25	24	49	42	39	38	37	36	38

Copper Tubes, 3¢ ₩ lb additional.

Copper Bronze and Gilding Tube, 3¢ ₩ lb additional.

Brazed Brass Tubing. (To No. 20, inclusive.

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch	45¢
Plain, 5-16 inch	45¢
Plain, ¼ inch	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch	1.50
Fancy Tubing, Brass, to No. 20, inclusive	45¢ ₩ lb
Bronze Tubing, 3¢ ₩ lb more than Brass.	
Discount from list	30 @ .. %

Roll and Sheet Brass.

(*Brown & Sharpe Standard Gauge.*)

Common High Brass: Wider than and including	in. 2 / 10	in. 10 / 12	in. 12 / 14	in. 14 / 16	in. 16 / 18	in. 18 / 20	in. 20 / 22	in. 22 / 24
To No. 20, inclusive	.21	.22	.23	.25	.27	.29	.31	.33
Nos. 21, 22, 23 and 24	.22	.23	.24	.26	.28	.30	.32	.34
Nos. 25 and 26	.22½	.23½	.24½	.27	.29	.31	.33	.35
Nos. 27 and 28	.23	.24	.25	.28	.30	.32	.34	.36
Common High Brass: Wider than and including	in. 24 / 26	in. 26 / 28	in. 28 / 30	in. 30 / 32	in. 32 / 34	in. 34 / 36	in. 36 / 38	in. 38 / 40
To No. 20, inclusive	.36	.39	.42	.46	.50	.55	.60	.66
Nos. 21, 22, 23 and 24	.37	.40	.43	.47	.51	.56	.61	.68
Nos. 25 and 26	.38	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28	.39	.42	.45	.49	.53	.58	.66	.76

Discount from List 10 % to 25 %.

Brass and Copper Wire.

List January 17, 1884.

Numbered by Stubs' gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
All Nos. to No. 16, inclusive	$0.22	$0.24	$0 26	$0.30
No. 17 and No. 18	.23	.25	.27	.31
No. 19 " " 20	.24	.26	.28	.32
No. 21, or 0.032 diam	.25	.27	.29	.33

Discount 10 % to 25 %.

Fine Numbers.

Numbered by London gauge.	Brass.	Spring high brass.	Low brass.	Copper.
No. 22	$0 26	$0.28	$0.30	$0.34
No. 23	.28	.30	.32	.36
No. 24	.30	.32	.34	.38
No. 25	.32	.34	.36	.40
No. 26	.35	.37	.39	.43
No. 27	.38	.40	.42	.46
No. 28	.42	.44	.46	.51
No. 29	.45	.47	.49	.54
No. 30	.48	.50	.52	.57
No. 31	.51	.53	.55	.67
No. 32	.55	.57	.59	.73
No. 33	.59	.61	.63	.82
No. 34	.64	.66	.68	.96
No. 35	.70	.72	.74	1.30
No. 36	.76	.78	.80	1.50
No. 37	1.00	1.02	1.04	1.70
No. 38	1.30	1.32	1.34	2.00
No. 39	2.00	2.02	2.00	3.25
No. 40	2.60	2.62	2.60	5.75

— % discount.

Spring Wire, 2¢ ₩ lb advance.

Copper Belt and Hose Rivets and Burrs.

	Per lb.		Per lb.
No. 5	49¢	No. 11	56¢
No. 6	49¢	No. 12	58¢
No. 7	49¢	No. 13	60¢
No. 8	50¢	No. 14	65¢
No. 9	52¢	No 15	70¢
No 10	54¢		

60 % @ 5 % discount.

Tobin Bronze—Rods.

Drawn Rods for Bolts, Forgings, &c.

¼ to ⅝ inch inclusive	18¢ ₩ lb
Over ⅝ to 3½ inches inclusive	17¢ ₩ lb
Over 3½ to 6 inches inclusive	18¢ ₩ lb

Piston Rods, Finished True, Smooth and Straight.

¼ to ⅝ inch inclusive	19¢ ₩ lb
Over ⅝ to 2 inches inclusive	18¢ ₩ lb
Over 2 to 3½ inches inclusive	19¢ ₩ lb
Over 3½ to 6 inches inclusive	21¢ ₩ lb

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.

Western Spelter	5¼¢
Bertha (pure)	8¼¢

Zinc.

Duty: Sheet, 2½¢ ₩ lb.

600 lb casks	6⅜¢
Per lb	7 ¢

Lead.

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb Pipe and Sheets, 2½¢ ₩ lb.

American Pig	4½¢ @ ..
Bar	5 ¢
Pipe, subject to discount 20 %	6½¢
Tin-Lined Pipe, subject to discount 20 %	15¢
Block Tin Pipes, subject to discount 20 %	37½¢
Sheet, subject to discount 20 %	7¢
Old Lead in exchange, 3¼¢ ₩ lb.	

Solder.

½ @ ½ (Guaranteed)	12¾¢
No. 1	11½ @ 11¾¢
Extra Wiping	12 @ 12½¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson	₩ lb 15 @ ..
Hallett's	" .... @ 12 ¢

ALUMINUM.

Prices Per Ton.

Duty: 15 cents per pound.

Over 98 % pure	₩ lb .75
94 % @ 98 % pure	₩ lb .65

Old Metals.

Prices Paid in New York.

Heavy Copper	₩ lb 10 ¢
Light Copper	₩ lb 9 ¢
Heavy Brass	₩ lb 7 ¢
Light Brass	₩ lb 6 ¢
Lead	₩ lb 3½¢
Tea Lead	₩ lb 3½¢
Zinc	₩ lb 2½¢
No. 1 Pewter	₩ lb 14 ¢
No 2 Pewter	₩ lb 12 ¢
Wrought Scrap Iron	₩ gross ton $17.00
Heavy Cast Scrap	₩ gross ton 10.00
Stove Plate Scrap	₩ gross ton 7.00
Burnt Iron	₩ gross ton 5.00